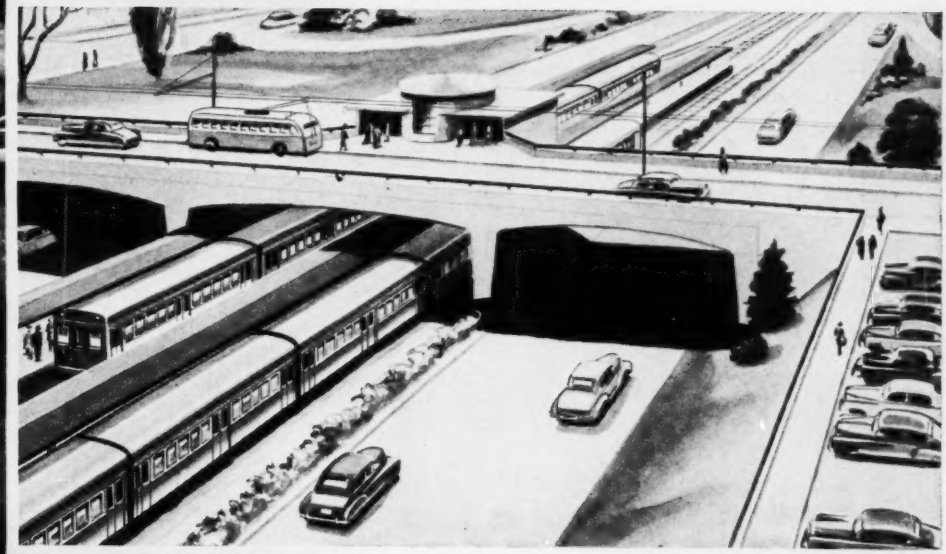
DECEMBER, 1955

Traffic Engineering

Aerial View of Downtown Chattanooga

- Chattanooga's First Year of Traffic Engineering
- Does Wheel Balancing Pay?
- More Flexibility with Fixed Time Equipment
- Traffic Accident Experience — Before and After Pavement Widening

Official Publication of the Institute of Traffic Engineers



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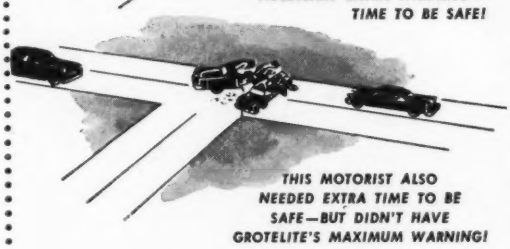

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Traffic Engineering

OFFICIAL PUBLICATION OF THE INSTITUTE OF TRAFFIC ENGINEERS

VOL. 26 DECEMBER, 1955 NUMBER 3

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COVER: Aerial view of Chattanooga, Tennessee, with the downtown area in the foreground and the Tennessee River in the background. Nature has looked favorably upon Chattanooga in giving her a beautiful winding river flanked by mountains of spectacular beauty, however, this picturesque setting has greatly aggravated the traffic problem.

DEFINITION: Traffic Engineering is that phase of engineering which deals with the planning and geometric design of streets, highways, and abutting lands, and with traffic operation thereon, as their use is related to the safe, convenient, and economic transportation of persons and goods.

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Frankly Speaking

THE YEAR 1955 is a milestone and, we believe, the beginning of a new chapter in the life of the Institute of Traffic Engineers, since it is the year of its 25th anniversary. The Institute is now at the threshold of a new era and an exceptionally promising future.

During the past 25 years the Institute's membership has grown from 30 charter members to nearly one thousand.

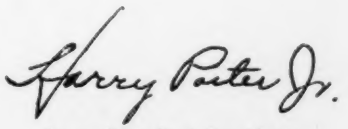
The most important developments during recent years are the formation of a Technical Council and twelve regional and local sections. The Technical Council with seven departments under which 31 committees are working on projects relating to highway transportation has become the backbone of the Institute and contributes greatly to the advancement of the profession. Many of these projects will eventually develop new and interesting standards for use in the practice of traffic engineering.

The twelve regional and local sections meet regularly to exchange ideas and discuss problems of a local nature, and to give first hand assistance to other groups working for improved traffic management. A close working relationship with these other groups has been of great value—for we realize that safe and efficient movement of traffic is more than an engineering problem.

For future, the Institute, with the addition of an Assistant Executive Secretary, certainly will be in a position to be of better service to the members and further its public relations, particularly with other engineering and national organizations interested in transportation problems.

However, most important is the moving of Institute Headquarters to Washington, D. C., early in 1956, to the new National Society of Professional Engineers Building. Since many of the 60 national organizations and engineering societies we cooperate with have their headquarters in or near Washington, our active liaison and cooperative efforts can be broadened considerably.

The future brings a problem which we must face. Now that many municipal officials realize the importance of traffic engineering as part of local government responsibility, the shortage of traffic engineers becomes serious. The Institute can further its leadership by encouraging more young trained engineers to qualify themselves for this responsibility, which must be placed in competent hands.



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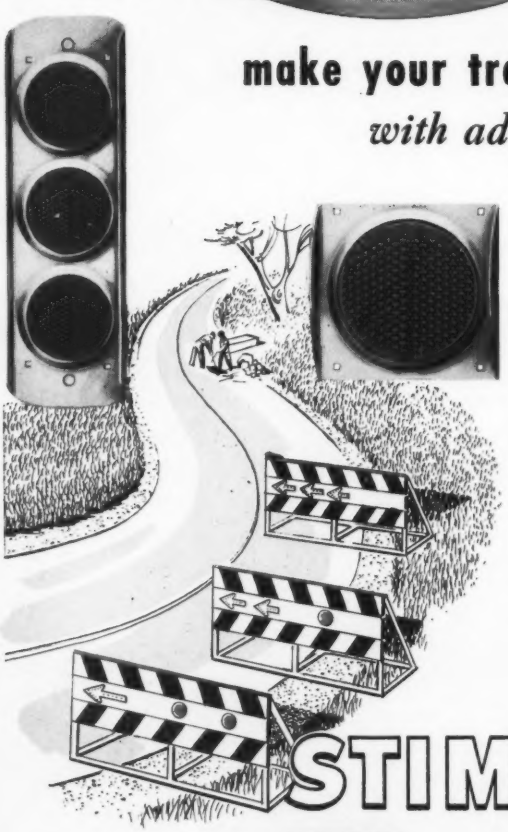

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Chattanooga's First Year of Traffic Engineering

By Marble J. Hensley (Assoc. Mem., ITE)
Traffic Engineer, Chattanooga, Tennessee

Fig. 1
MARKET STREET BRIDGE. This is the principal crossing of the Tennessee River in Chattanooga. Four 9-foot traffic lanes are available on this bridge and the staggered lane arrangement is used during rush hours.

CHATTANOOGA, TENNESSEE, is primarily an industrial city although she is possibly more famous for her scenic beauty. The population within the city limits is 135,000, however, including the suburban areas adjacent to the city limits, this population is increased to 250,000.

The city is suffering from growing pains and a very acute traffic problem. A great part of this problem is inherent. Nature has looked favorably upon Chattanooga in giving her a beautiful winding river flanked by mountains of spectacular beauty, however, this pictorial setting has greatly aggravated the traffic problem. The only way of entering the downtown area is to go around Lookout Mountain, through Missionary Ridge or across the Tennessee River. We do have two wide streets in the downtown area but one dead-ends at the Tennessee River and the other crosses the river by means of a 36-foot bridge. (Fig. 1.) This bridge, at the present time, is handling 33,000 vehicles per day. Our other bridge, an 18-foot wooden structure, is handling 14,000 vehicles per day. (Fig. 2.) The four tunnels entering Chattanooga through Missionary Ridge are equally overloaded so that we have a severe traffic problem throughout our entire city.

The city of Chattanooga is operated by the Mayor-Commission form of government. The Traffic Engineering Department is on an equal level with other city departments. We are a part of the General Government section—that is, we are directly responsible to the Mayor and Board of Commissioners. The Mayor and City Commission have been very interested in giving to Chattanooga a good traffic engineering program and they have supported all phases of our program during this first year of operation.

On September 15, 1954 Traffic Engineering was born in Chattanooga. The Traffic Engineer reported for duty from Atlanta and a secretary, three parking meter service men and a sign erector were transferred from other city departments to form this new department. Our first duty was to help formulate the necessary ordinances that would create our department and also outline its duties.

Our task during the first year has been to get an adequate budget, adequate personnel and the required authority to give this city an outstanding traffic engineering program. Through patience and care in the selection of locations to be improved, we believe that we have been successful in selling Traffic Engineering to the people of Chattanooga. The tremendous public support that our program has received has made our job much easier. Also, we believe that the schedule which we have followed in developing our program has further stimulated this interest and support. It is most imperative for anyone setting up a new department in a city of our size to be very selective in making improvements. To make them faster than the public can respond to them can utterly destroy a sound traffic engineering program. It was our intention to concentrate on the operational type improvement during our first year. We planned and placed into operation the following program:

Traffic Signs: Many of the traffic signs within the city were inadequate and substandard. These signs followed no consistent pattern of shape, size, color or message. (Fig. 3). One of our very first undertakings was to show the need for uniform traffic signs. We felt that a good signing program would have to be initiated before a strict enforcement program could be undertaken. To sell the public on the necessity of efficient traffic signing, we decided to adopt the red

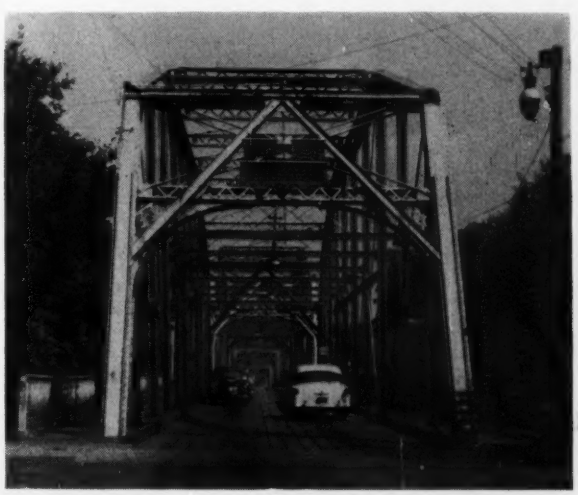


Fig. 2
This is one of the two bridges crossing the Tennessee River. This bridge is an 18-foot wide wood and steel structure known as the Walnut Street Bridge. All commercial vehicles are prohibited because of structural conditions.

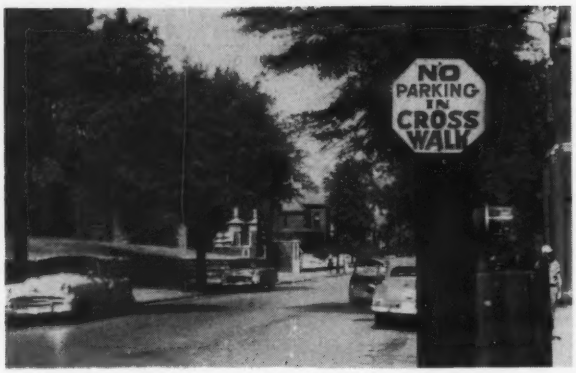


Fig. 3
A sample of the non-conforming traffic signs that exist throughout the city.

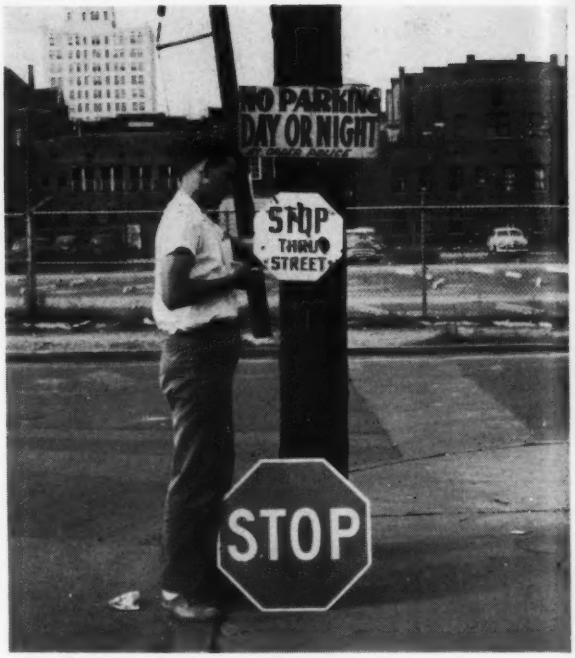


Fig. 4
C. F. Bolton of the Service Shop replacing an 18-inch non-reflectorized stop sign. This type sign was in general use throughout the city. The replacement is a 24-inch reflectorized sign.

stop sign. (Fig. 4). This sign allowed us to show the public all the important principles required in adequate traffic signing. The public immediately grasped the importance of having reflectorized signs as well as using color, shape and legend to convey the message. After installing about 40 or 50 of these signs the public was clamoring for their use throughout the city. Through this one type of sign the general public was sold on the importance of proper traffic signs. By constantly reminding them of the cost of good signs we were able to further convince the public that we must have an adequate budget in order to get good signing.

To reduce the cost of our sign program we recommended that our department be permitted to make our own signs. The city officials approved this plan and we have been steadily adding equipment in our shop for this purpose. Within the next few weeks we will have a completely equipped sign shop capable of producing any type traffic sign.

Lane and Center Lines: One of the cheapest methods of increasing street capacity is, of course, to paint center and lane lines. At all civic meetings we kept reminding the people of the importance of a good painting program. Before the Traffic Engineering Department was established the federal highways were the only streets with painted lane and center lines. To show the benefits of lane lines we managed to get two one-way streets painted in the downtown area—after painting these two streets we received many requests for an expanded painting program. Again, we stressed the cost of street painting in order to acquaint all concerned with the absolute necessity of an adequate budget.

Curb Painting: We also adopted a standard for curb painting. In the past, the painting of yellow curb only meant that some type of special regulation was to govern. It also required a sign to explain the regulation. We adopted yellow for NO PARKING and orange for LOADING ZONES which has eliminated the dual requirement of paint and sign.

Traffic Signals: Chattanooga had very few signalized locations and no modern traffic control equipment. The downtown system operates from one controller to produce a double alternating system. The outlying intersections are all controlled by single dial controllers. At one of the busiest locations in the state—the north end of Market Street Bridge—a police officer operated the traffic signal controller manually during the daylight hours. At this intersection the daily volume is 45,000 vehicles with the major movement being a left turn as the vehicles come off the bridge. This intersection was selected as one of the first three locations to be modernized. At this location we installed a 3-phase volume density controller (Fig. 5), with a minor movement (all red interval) for pedestrians. This signal was placed in operation in February and since that time the traffic volume has increased about 10 percent. The delay has been reduced from an average waiting time of six minutes to 45-seconds during the rush hour. After the second week of operation the police officer was no longer needed at this intersection thereby releasing him for duty elsewhere. This was the first actuated controller in Chattanooga and it has been a tremendous success.

At the other two locations in this first group to be modernized, we installed multi-dial equipment which has also proved to be very successful. These three installations were the first traffic signals installed with city personnel. Prior to the establishment of the Traffic Engineering Department, all traffic signal installations and maintenance had been done by private contractors. With the assistance of Joe Griffin, City Electrician, and Ralph Lewis, Jr., Assistant Traffic Engineer, we have developed a very efficient installation and maintenance crew.

To provide greater safety to the motoring public, we have established a standard for all signal head locations. This standard is based on double indications—one, a center suspended span wire mounted signal and the other is a far right pedestal mounted signal. If pedestrian signals are used, these signals are also mounted on the far right pedestal.

We are also using special actuated signals for school crossings. This type signal is normally dark but upon actuation the main street signal sequence is as follows: Amber for about five seconds followed by the red indication during the walk interval and then amber again for three seconds before the signal goes dark. We erect traffic signs well in advance of the crossing to warn the motorist of this particular type of signal. Through this initial application of

Fig. 5
The intersection of Market, Cherokee and Frazer Streets is one of Tennessee's busiest intersections. The heavy movement is shown which is a left turn from the Market Street Bridge approach to Cherokee Boulevard. The intersection is now controlled by a 3-phase volume density dispatcher.

modern traffic signal equipment, we have sold the need for modern traffic signal equipment and are now modernizing our entire system as rapidly as funds are made available.

Channelization: In order to further illustrate the value obtained from a well rounded traffic engineering program, we have plans for channelizing several intersections. We have constructed pedestrian safety islands at two downtown intersections. (Fig. 6). These islands are performing a dual role as we are also using them for mounting a pedestal traffic signal. The public has enthusiastically endorsed this type of improvement.

One-Way Street System: With the present street improvement such as the widening of Ninth Street (this street was widened from 30-feet to 72-feet from curb to curb) as well as other street improvements planned for the downtown area, we were compelled to re-study the traffic flow in this area. This study indicated a need for an expanded one-way street system. (Fig. 7.) We recommended that Chestnut, Carter, Houston, Tenth, Eleventh and King Streets be made one-way. It also indicated that the flow on about half of the existing streets would have to be reversed. These streets included Cherry, Walnut and Lindsay Streets and Georgia Avenue. All of these recommended one-way streets are in operation with the exception of Tenth and Eleventh Streets. These will be made one-way streets as soon as the necessary traffic signals can be installed. Our one-way street recommendation also asked that Tenth, Houston, and Pine Streets be resurfaced. All three of these streets were resurfaced by the Public Works Department within three months after our request. This is another example of the fine cooperation between the city departments in Chattanooga.

Public Relations: The Traffic Engineering Department has established very good public relations. We feel that this is of utmost importance if our program is to succeed. Both newspapers have given us splendid support—almost all of our recommendations have appeared on the front page. The reporters have been most cooperative in waiting until all the facts were assembled before printing the story. At no time have they supported any other view except the recommendations of the traffic engineer. We are most grateful for their valuable assistance. We also have splendid relationship with other departments. The police department has given us their wholehearted support. The city engineer voluntarily issued orders that all permits for driveways and street cuts must be approved by the traffic engineer before the permit would be granted. All of our civic groups have also supported our program. With all this fine support, we regret that our accomplishments during our first year are not more extensive.

Fig. 6
Ninth Street was widened from 30 feet to 72 feet. Islands have been constructed at this intersection to protect pedestrians and traffic signal installations. This photograph was taken before the final asphalt paving was complete. The four right traffic signals were not installed at this time either.

Our relationship with the State Highway Department has been most pleasant. The State of Tennessee has recently finished a Highway Needs Study. We were fortunate in having a small share in this study by assisting the state in evaluating Chattanooga's street needs. We are pleased to report that we have mutually agreed upon and placed into operation the first improvement in highway rerouting in Chattanooga.

Budget: In order for the department and its services to expand, we had to have a larger budget. The Chattanooga

(Continued on page 112)

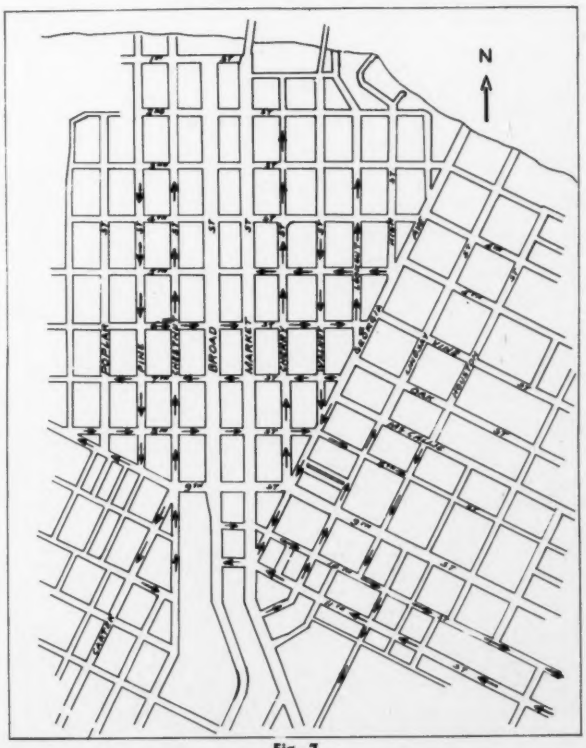


Fig. 7
Recommended one-way street system for downtown Chattanooga.

Does Wheel Balancing Pay?

By David I. Cook

Assistant Professor of Engineering Mechanics, University of Nebraska
Lincoln, Nebraska

BASED ON RECENT TESTS at the University of Nebraska, the answer to this question is a qualified yes.

There has been much discussion among garage mechanics, car owners, operators of fleets of vehicles, and others about the advisability of balancing automobile wheels. Because of the conflicting opinions expressed and the tremendous number of tires in service, it was believed worthwhile to undertake a scientific investigation in an attempt to answer the question, "Does Wheel Balancing Pay?" Accordingly, a research grant was provided through the University of Nebraska Foundation, and a study was made during the spring, summer, and fall of 1954.

Several aspects of the problem, such as tire wear, general mechanical wear, gas mileage, and vibration effect on occupants were considered. Of these several aspects, only two—tire wear and vibration effect—were finally considered as having a direct bearing on the question.

Fig. 1
Apparatus used in wheel balancing.

Fig. 2
Measuring tread depth.

Tweve cars were selected from the university fleet, to be used in the experiments. Wheels on some of the vehicles were balanced and on others were unbalanced by a fixed amount of four ounces on the rim. Figure 1 shows the apparatus used in balancing the wheels. An electric motor was used to rotate the wheel at high speed and an optical vibrometer, mounted on the front fender, was used to indicate the vibration produced by unbalance. Rough calculations were made to determine the approximate amount of unbalance, and a final adjustment in the amount of correction to be applied was made by trial and error. After making a number of actual measurements on tires and studying data supplied by leading tire manufacturers, the value of four ounces appeared to represent an average amount of unbalance which could be expected in light passenger car tires.

One exception was made to the fixed four-ounce unbalance. A single vehicle, a station wagon, was unbalanced by varying amounts of three ounces on one wheel, seven ounces on a second, nine ounces on a third, and fourteen ounces on a fourth.

Tire Wear

The amount of tire wear was determined by measuring the tread depth at different times as the tires were in service and comparing the results of the measurements. A depth micrometer, shown in Figure 2, was used to measure the tread depth at four positions equally spaced around the periphery. The average value of the tread depth was computed. A record of the mileage was also kept.

The relation between tire wear and miles traveled may be seen graphically in Figure 3. Some of the curves have been omitted for clarity. It is interesting to note that, in most cases, the rate of tire wear does not change appreciably after balancing. Also, the station wagon tires which were heavily unbalanced showed more rapid wear than did other tires, and the larger the unbalance, the more rapid was the wear. Re-

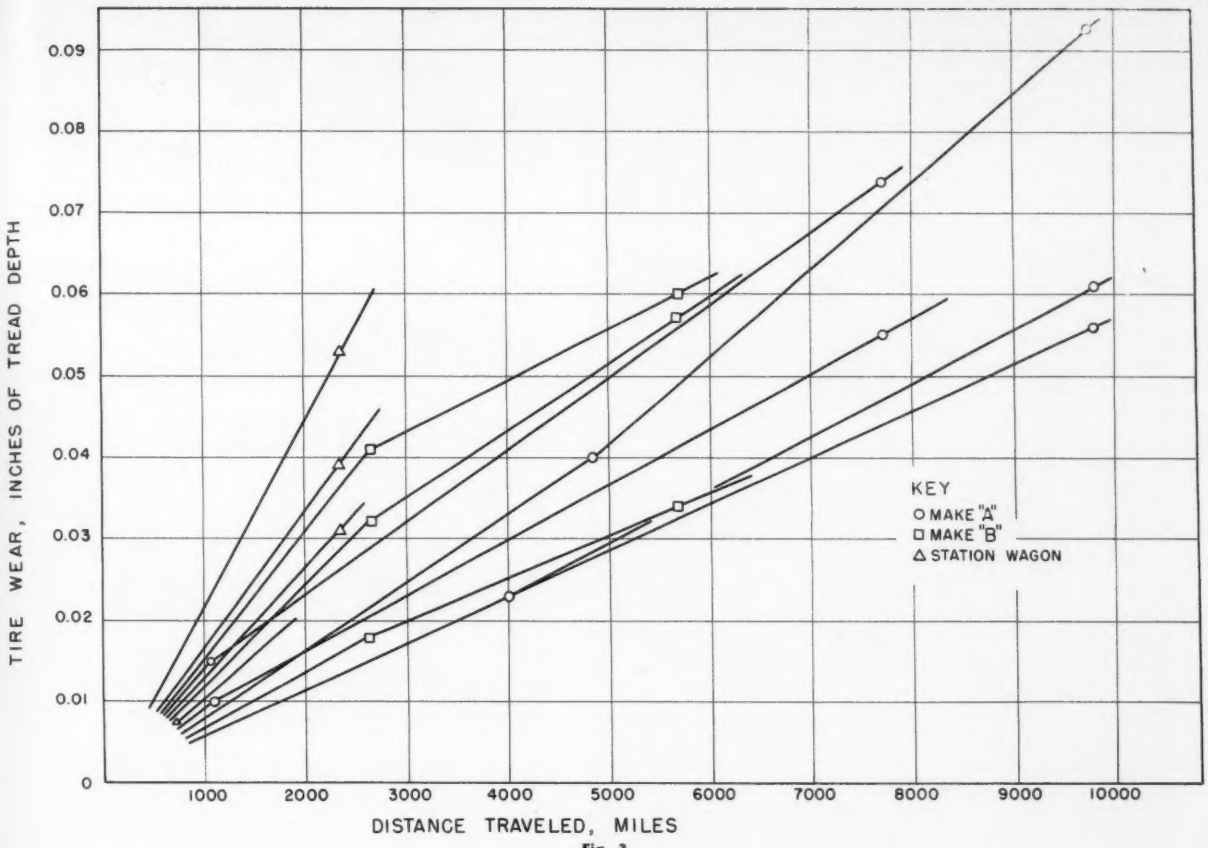


Fig. 3
Automobile tire wear.

sults of this single vehicle should not be considered as conclusive, however.

The wear rate was also computed for each tire, dividing the total wear by the total miles traveled, and expressing the result in inches of tread depth per 1000 miles. A comparison of the wear rates for balanced and for unbalanced wheels may be seen in Figure 4. The greater rate of tire wear for unbalanced wheels is at once apparent. These results indicate that an increase in tire life of from ten to thirty per cent can be expected by balancing the wheels. This increase would more than offset the cost of balancing.

Vibration Effect

Vibration tests were made at speeds ranging from forty to seventy miles per hour with unbalances of two, four, six, and eight ounces on the rims of front wheels only, rear

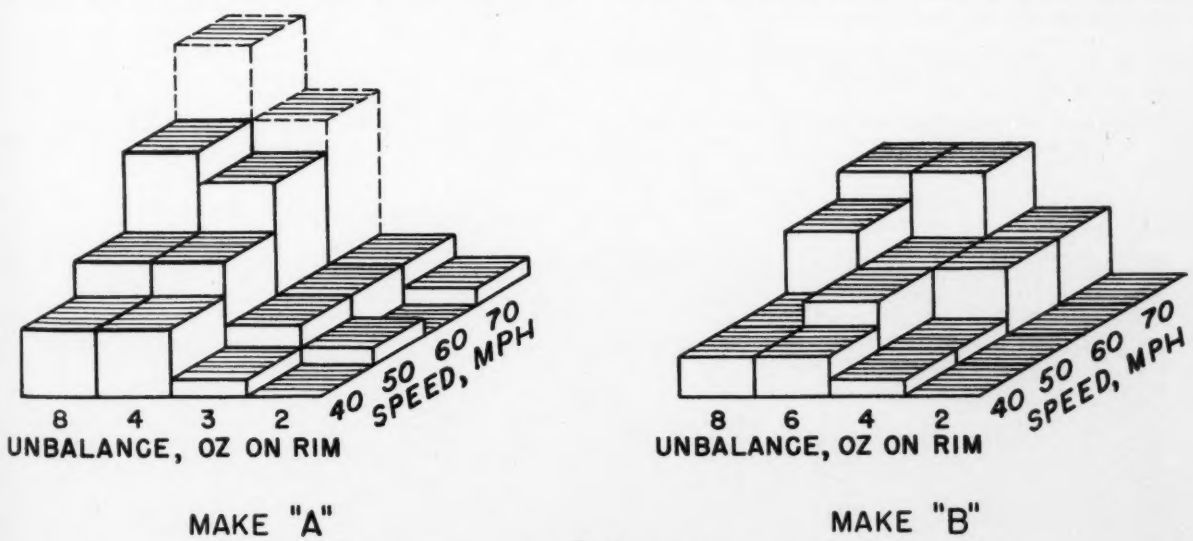
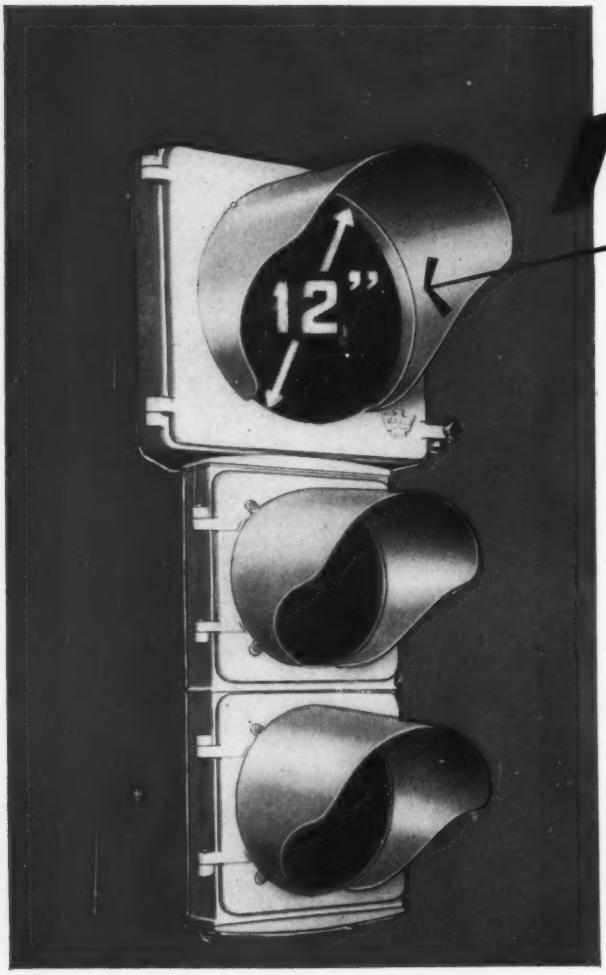


Fig. 4
Tire wear comparison — balanced and unbalanced wheels.



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The new signal is available with prominent 12" *red* lens as illustrated or as a complete signal with 12" lenses in all *three* sections. Arrow lenses are also available. Sections are easily and quickly mounted. Each section is completely enclosed at top and bottom and is joined to other sections with a single nipple and two lock nuts or by two bolts.

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Municipal Division, Dept. TE-1255
MOLINE, ILLINOIS

Please send bulletin on new 12" lens Traffic Signal.

NAME AND TITLE

ORGANIZATION

FULL ADDRESS

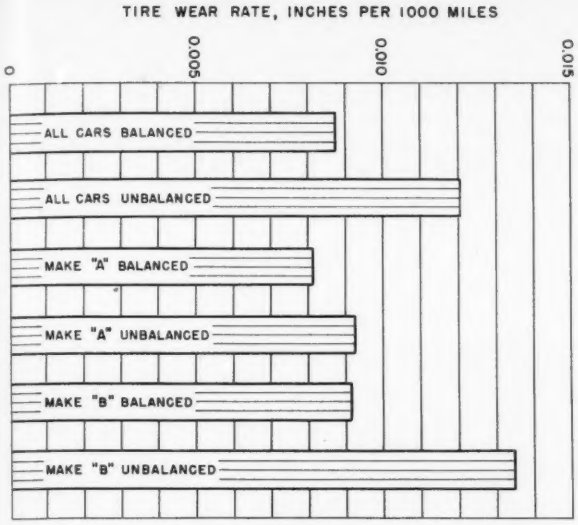


Fig. 5
Vibration effect caused by wheel unbalances at different speeds.

wheels only, and both front and rear wheels. The measurement of vibration produced by unbalanced wheels was based on the judgment of several passengers.

This means was found to be the only practical one available for obtaining an indication of the relative vibration effects of different amounts of unbalance on the wheels, although several unsuccessful attempts were made to measure the vibration, using vibrometers of different types.

Five categories were selected for reporting the vibration: none, small, medium, large, and very large. Table 1 shows the results of the tests, and Figure 5 is a graphical representation of the vibration caused by wheel unbalance.

It is interesting to note that one make of car appeared to be more sensitive to unbalance than another make, and that a critical speed was present at which a relatively small unbalance caused appreciable vibration.

The vibration tests clearly indicate that badly unbalanced wheels will cause objectionable vibration of the steering wheel, floor, and other parts of the car body. The effect is more pronounced when the front wheels are unbalanced. The mechanical wear which may result from wheel unbalance vibration is difficult to estimate, but the effect on the driver and passengers is certainly detrimental.

Conclusions

Results of the tests indicate that the average driver may save from ten to thirty percent of the cost of his tires by having the wheels balanced.

Table 1
WHEEL UNBALANCE VIBRATION

Auto Make	Amount of Unbalance (oz on rim)	Auto Speed mph	Vibratory Effect Noticeable Within Auto	
			On Steering Wheel	On Floor
A	2	40	N	N
A	2	50	S	N
A	2	60	N	N
A	2	70	S	N
A	3	40	S	N
A	3	50	M	N
A	3	60	S	S
A	3	70	S	S
A	4	40	M	S
A	4	50	L	S
A	4	60	L	M
A	8	35	S	N
A	8	40	M	S
A	8	50	L	S
A	8	60	VL	M
B	2	40	N	N
B	2	50	N	N
B	2	60	N	N
B	2	70	N	N
B	4	40	N	S
B	4	50	N	S
B	4	60	S	M
B	4	70	S	M
B	6	40	S	S
B	6	50	S	M
B	6	60	S	M
B	6	70	M	L
B	8	40	S	S
B	8	50	S	S
B	8	60	M	M
B	8	70	M	L

Key:
N = No vibration
S = Small vibration
M = Medium vibration
L = Large vibration
VL = Very Large vibration

Further tests have indicated that well-balanced wheels will remain in a reasonably good condition of balance for a considerable period of use, well over 10,000 miles, so that repeated balancing is seldom necessary.

The additional consideration, elimination of continuous vibration at high speed, makes wheel balancing definitely worth while.

It is believed that, from an economy standpoint, wheels should be checked for unbalance at the factory and balanced, if necessary, before the car is delivered.

GE Department Moves

For many weeks the Outdoor Lighting Department of the General Electric Company has been moving from Lynn, Mass., to its new $5,000,000 plant in Hendersonville, N. C.

Most of the manufacturing facilities are moved and the engineering section is relocated. By Christmas all of the marketing organization, except Order Service personnel, will be in the South.

Joseph T. Bailey, department general manager, said that construction is rapidly nearing completion. The plant eventually will employ about 600 persons in the research, development, manufacture and sales of traffic, street, and recreational outdoor lighting.

Occupying a site of 60 acres, the plant will contain more than 200,000 square feet of manufacturing and office space to make Hendersonville the "outdoor lighting center of the world," Bailey said.

Graduate Fellowships Offered

Three fellowships for graduate study of highway engineering in 1956-57 have been offered the University of California by the Automotive Safety Foundation. One of $3,000 is open to a college instructor of highway transportation engineering who already holds a master's degree. Two of $2,000 each are open to engineering graduates with preference to those with highway engineering experience since college. Applications close February 15, 1956. Those interested should immediately contact the Institute of Transportation and Traffic Engineering, University of California, Berkeley 4.

More Flexibility with Fixed Time Equipment

By Lionel M. Rodgers
Chairman of the Citizens' Committee on Traffic Control, Philadelphia, Pennsylvania

Fig. 1
Flexible fixed time equipment in operation at the intersection of Germantown Avenue and Mt. Airy Avenue in Philadelphia. A T-intersection with signals on each coordinated in separate progressive systems.

Introduction

A PEDESTRIAN EXCLUSIVE PERIOD at an intersection involving a street having progressive traffic control has either interrupted the progressive movement of traffic on the street involved or required complicated and expensive control equipment, or both.

In the course of developing the progressive traffic control plans for various arterial streets in Philadelphia, the author found that he was stymied by such intersections and even the actuated fixed time equipment available would fail to help matters much.

By making simple modifications to standard single dial control equipment, the author was able to develop a controller which permits an actuated pedestrian phase while minimizing intereference to the progressive movement of traffic on the timed street.

A description of the controller developed, its functional advantages, and the exact circuits employed follows.

The Problem — Increased Intersection Efficiency

At certain intersections which require three phase operation, actuating the third phase can considerably increase intersection capacity. Such intersections include "Y" or "T" intersections where an exclusive pedestrian phase is necessary but pedestrian traffic is not always present (see Figure 1), and intersections having a minor third street on which traffic is sporadic. For an isolated intersection of this type standard equipment of the type providing normal two-phase operation when the pedestrian or third vehicular phase is not called, and "extended cycle" operation when the third phase is called, is entirely satisfactory and fulfills the need. However, this "extended cycle" operation causes the total cycle to increase by the time of the third phase and is therefore not permissible if either intersecting street is on progression.

Where it was desired to keep the cycle at intersections of this type fixed, single dial fixed time equipment with a third actuated phase was available, but required that the time of the actuated third phase be taken from the time of *one or the other* of the remaining phases. With such equipment actuation of the third phase caused an undesirable shift in the split between the first and second phases which essentially ruled out its use at any location where traffic was heavy on both the first and second streets.

An example will illustrate this point. Assume a "T" intersection between streets A and B, street A being the through street. If traffic from street B is heavy and divides between left and right turn movements into street A, there will be no period with conventional two-phase control in which the pedestrian can safely cross street A at this intersection. If, however, pedestrian traffic occurs only occasionally, such as from a school or factory, the use of fixed time pedestrian exclusive period would probably be difficult to tolerate, particularly if street A has a progression and intersection B is at a difficult location in the time space diagram, or if the maximum density of traffic on street A does not coincide with the periods of pedestrian use. Under either of these conditions, an actuated pedestrian phase might well be justified.

To see what may happen under these circumstances with previously available equipment, assume a cycle length of 60 seconds and a required pedestrian crossing time, including clearance, of 20 seconds. Assume also that traffic on "A" requires 50% of the cycle at peak, and traffic on "B" requires

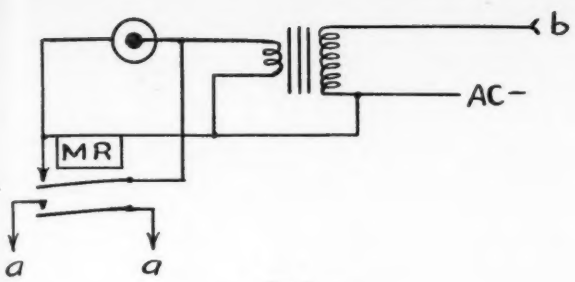


Fig. 2
Memory relay circuit.

30% of the cycle at peak, but, that pedestrian use and vehicular peak times do not coincide. Under these peak conditions, 50% of 60 seconds, or 30 seconds plus clearance (say 33 seconds) is required for street A. Now with this former equipment the traffic engineer was on the horns of a dilemma. He has no choice but to take the 20 seconds required for pedestrian time from street A, therefore provide street A with only 10 seconds plus clearance when actuation occurred. Even if traffic dropped to the point where each street needed 60% of its peak time requirement during the period of heavy pedestrian use, street A still needed 18 seconds and street B 11 seconds. Under these conditions, street A had a deficit of time and street B a surplus of time.

One possible solution to this problem was the use of a two-dial controller, the first dial being set for the proper split without third phase actuation, and the second dial being set to give the proper split with third phase actuation. Both dials would have to run continuously, in order to maintain synchronization with the result of increased maintenance, as well as first cost. The present single dial controller can give substantially the same flexibility as the multi-dial equipment with fully satisfactory performance and, of course, with lower first cost and maintenance.

The requirements which were established for this controller were as follows:

A two-lens signal for pedestrians was to be used, the first lens being "Walk" and the second "Wait." Provision was to be made for a "Walk-Wait" overlap near the end of the pedestrian interval and for a pedestrian clearance interval after the "Wait" indication began. A memory circuit was to be incorporated which would be effective at any time the "Wait" indication was shown. Complete independence of adjustment was required so that the pedestrian time as well as the main and cross streets time under actuated and unactuated conditions could all be separately adjustable. The beginning of the first street green was to be made the fixed point in the time cycle. The controller used was to be of standard 12-key type with a maximum of 15 cams. A minimum number of relay circuits were to be used.

All of these objectives were attained in the design as well as certain other features which will be described.

The Circuit Design

Use is made of the fact that the memory circuit was to be effective only during the "Wait" periods. The primary of the step-down transformer used to supply energy for the pedestrian push-button memory relay circuit is bridged across the "Wait" lamp circuit. Fig. 2 shows the memory relay circuit used.

This circuit is a conventional stick or lock-up relay circuit, in which the relay MR remains energized once actuation occurs until the "Wait" indication is extinguished. Energizing the MR relay closes the circuit marked a-a in Figure 2.

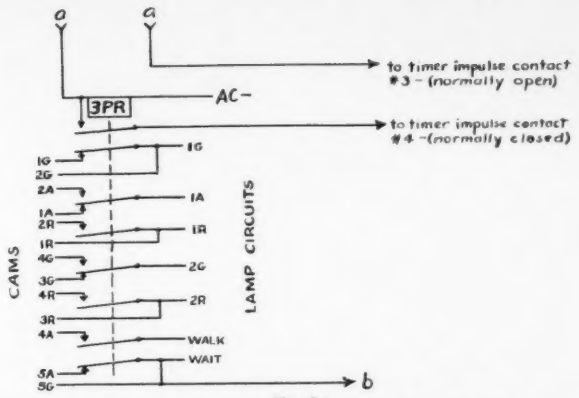


Fig. 3
Switching circuit which causes three-phase operation.

Figure 3 shows the switching circuit which causes three-phase operation in response to energization of the stick relay MR.

Standard timers are available with up to five-dial impulse circuits, which, in general, can be either front or back contacts. In the present case, four of these are utilized, the first two being the standard impulse and interlock circuits, the third being a front contact (No. 3 timer impulse contact in Fig. 2) and the fourth a back contact (No. 4 timer impulse contact in Fig. 2). Each of these latter two contacts are operated by special timer keys which can also double as impulse keys.

The function of this circuit is as follows: if the stick relay MR is closed, the circuit a-a in Figure 2 will be closed, and instantaneous closing of the No. 3 impulse contact will cause 3PR relay coil to be energized, closing the front contacts of 3PR and locking up this relay over its front contact and the normally closed No. 4 timer impulse contact. The No. 3 impulse contact is caused to close in the green period of the number one street as late as practical before the end of the green period for three-phase operation. At this time the indications are the same for both 2 and 3 phase operation, so operation of the 3PR relay causes no change of indication.

After the pedestrian phase is over and the second street green is on, another period of ambiguous operation exists between two and three-phase operation. This period is utilized to effect restoration of the 3PR relay to its de-energized condition as follows: when the "Wait" indication was extinguished, the source of energy for stick relay MR was removed and this relay dropped, opening the connection a-a in Figure 2. Relay 3PR continues to remain energized over its own front contact. When the No. 4 timer circuit is impulsed by a key momentarily opening this circuit, relay 3PR de-energizes and restores two-phase operation.

The circuits used to change from two to three-phase operation are shown in the lower portion of Figure 3. No momentary flickers occur at the time of relay operation. The relay sets up circuits only but *never switches current carrying circuits.* The life of all the contacts is, therefore, unlimited and small relays can be safely used. One cam and one relay control remain unused and may be used at a three-street location to control the third street amber, or to pro-

Fig. 4
Mr. Frank McGlade, Philadelphia's Superintendent of Traffic Signals, inspecting adaptation of fixed time equipment.

vide for an arrow or an advanced green indication on one of the streets of a two-street location.

The controller described provides a more economical solution to the problem encountered than two-dial equipment and with at least equal results. In addition to a saving of several hundreds of dollars in the cost of the new equipment, there is also a saving of maintenance because of one less timer and associated parts.

Development of the present equipment was undertaken only after the signal suppliers indicated that no controller was available which would perform in the manner desired. The success of the development was in no small measure due to the cooperation of Mr. Frank McGlade, Philadelphia's Superintendent of Traffic Signals (see Figure 4), who supplied the basic control equipment and gave his close personal attention to the project and to the installation in the field of the new equipment. At present, nearly 20 intersections have been signalized in Philadelphia with this equipment and plans call for the installation of many more.

In addition to providing a useful control device, this development is believed of interest in showing how special features can be obtained at little cost from simple control equipment.

CHATTANOOGA'S FIRST YEAR OF TRAFFIC ENGINEERING

(Continued from page 105)

Safety Council agreed to push a plan to raise more revenue. They recommended that the parking meter rates be increased to five cents for each 30-minutes of parking time. All that the traffic engineer had to do was to publicly endorse the Safety Council's recommendation. There was no organized opposition to this plan and after about six weeks the Mayor and Board of Commissioners approved the new rate. With this increase in rate we also recommended that the city install fine collection boxes in all metered areas. Yes, we are making it as convenient as possible for parking violators to pay their fines.

With the adoption of the budget for 1955-1956 our department was expanded to include an Assistant Traffic Engineer, two electricians, three laborers, one sign foreman and one traffic checker. We believe that we now have an organization that can give Chattanooga the type of traffic program that is needed.

Following is a comparison of our first (1954-1955) budget with our budget for this year (1955-1956):

	1954-1955	1955-1956
General Budget	$31,000.00	$115,000.00
*Special Appropriation	30,000.00	70,000.00
	$61,000.00	$185,000.00

Summary: We have attempted to sell Traffic Engineering in Chattanooga by the only possible means—PERFORMANCE. We have, however, limited the type and number of our improvements. This was done to enable the people to completely understand these improvements. By following this program during our first year we have succeeded in selling *The importance of Traffic Engineering.* Now, we must show them *The Results of a Sound Traffic Engineering Program.*

Freeways Delicately Attuned

The Nation's giant freeways are proving something that few foresaw when these marvels of speed, interchange and confusion were conceived.

What they are proving is that freeways are among the engineer's most delicately adjusted devices.

They well might be compared to a highly jeweled watch, a fine internal combustion engine or a television instrument.

Each is the result of ingenuity expended over a long period of years.

Each is composed of an infinite number of parts, many of them so tiny as to appear unnecessary.

But they all are necessary. If there be any doubt, just bend a minute cog on a watch sprocket or remove a screw from a carburetor.

Freeways first are images in the minds of men.

These images are transferred to the draftman's sketches.

Distances are calculated to a fraction of an inch.

Designs estimate the speed cars may travel with safety. They include the number of cars expected to use specific sections of the freeway, and of the cars which will leave or enter the freeway lanes by way of ramps.

Where possible, as on San Diego's fine Cabrillo Freeway, the effects of natural beauty upon the motorist are considered.

And the results of all this planning are magnificent. They speed traffic smoothly and without irritation. They do until * * * some motorist does something that could not have been foreseen.

Something like entering the freeway without caution. Or something like changing lanes without proper signals, or speeding, or going too slowly.

Then there is a crash, and within seconds the fine freeway becomes an infernal trap which backs up fuming motorists for miles.

In a manner of speaking, a cog got bent or a screw became lost in this fine mechanism.

Freeways can be no better than the drivers who use them, but they can be just as good, or just as bad.—*Editorial from San Diego Evening Tribune.*

Reprinted from *California Highways*

TO GIVE MORE "GO" on semi-traffic-actuated intersections, General Electric has developed a new Type V electronic controller (above, with accessories) and a new Type W electro-mechanical controller. Accessories, described below, may be used with either basic controller.

New G-E Type V Controller Can Take Full Line of Function-expansion Accessories

Here's what signal interval accessories do:

1. Actuated advance green split-phase timer provides for spasmodic left-turn movements against heavy or high-speed oncoming traffic.
2. Non-actuated advance green unit allows consistent left-turn movements by vehicles which can't be segregated from the through traffic.
3. Pedestrian timer provides longer green interval, upon actuation, for persons on foot.
4. Synchronizer (pictured above without enclosure box) co-ordinates semi-actuated controller in single-cycle system.
5. Minor movement timer provides separate actuated movement in addition to normal major traffic phase.
6. Double-phase, extra-interval timer furnishes two-part change interval on two phases.
7. Single-phase extra-interval timer gives two-part change interval for a single phase.

For swift, efficient handling of any pattern within its scope, General Electric announces the new Type V electronic semi-traffic-actuated controller!

FOR FULL VERSATILITY in meeting varying needs at the intersection, and for flexibility in case the traffic pattern shifts, G.E. also announces a complete line of accessories which, when needed, can be quickly and easily added to the basic controller!

WITH THESE FUNCTIONS, the new Type V has traffic-moving abilities to meet almost any situation a traffic engineer can think of—yet is characterized by simplicity of installation, operation, and maintenance. All that's necessary to add an accessory, for example, is to plug it in or attach it to a terminal strip.

YOU'RE NOT LIMITED to an electronic controller, either. G-E's Type W (electro-mechanical) has been redesigned to accept the same accessories as the Type V. Either of these basic controllers can be your first "building block," no matter what degree of semi-traffic-actuation is required now or in the future.

FOR FULL INFORMATION on these new controllers and accessories, contact your authorized G-E traffic distributor or Apparatus Sales Office, or write Section 453-65, Outdoor Lighting Department, General Electric Company, West Lynn 3, Massachusetts.

Progress Is Our Most Important Product

GENERAL ELECTRIC

Traffic Accident Experience - Before and After Pavement Widening

By A. J. Cope (Assoc. Mem., ITE)
Statistical Engineer, Illinois Division of Highways, Springfield, Illinois

Fig. 1

Fig. 2

A section of Illinois rural primary highway before and after widening and resurfacing. (Photograph made prior to introduction to skip-dash center line in Illinois.)

IN THE FALL OF 1954, the Engineer of Construction of the Illinois Division of Highways called for comparative statistics on accident experience before and after widening of pavements. A short survey of accident records produced inconclusive results. It was then decided to make a broad investigation of the subject.

The location description and date of opening was furnished by the Engineer of Construction for pavement widening projects totaling about 300 miles in length. Of these, 22 projects having a length of 244.3 miles, were selected for study. The location of the projects was such as to make them representative of the entire state. In most cases, widening was from 18 to 22 feet.

From the date of opening, before and after time-periods of equal length were set in accordance with the years of available accident records. A two-year period was sought and the average available was found to be 1.75 years. The list of sections with the time periods was submitted to the Bureau of Research for furnishing traffic volumes for the appropriate time. The volumes furnished were for 1947, 1950, or 1953. When any of these did not fit the selected time period of the section, the volume was adjusted in conformity with known trends.

The accident records were next searched at the specified locations and times. Tallies of the records were made with the following specifications:

1. Accidents at barricades, construction, and maintenance work were excluded from all counts. Their inclusion would unbalance the results because of patching jobs just prior to widening.
2. Accidents at driveways, entrances, and intersections were excluded in order that a clear picture of the accident situation on the straightaway could be obtained. This eliminated the influence of turning and slowing movements and angle collisions.
3. A special count was made of cases in which accidents appeared to be caused by, or their severity was increased by, the narrowness of the pavement.

The details of this portion are shown in Table I.

In Table II, data concerning the number of accidents,

TABLE I. NUMBER OF ACCIDENTS

LOCATION			TIME	BEFORE WIDENING				AFTER WIDENING				Narrow Pavement Contributing	
County	Route	Description	Periods - Before and After	Total	Fatal	Injury	PD	Total	Fatal	Injury	PD	Before	After
Adams	104	From Quincy to Liberty	8-1-49 to 8-1-51 1-1-52 to 1-1-54	41	-	15	26	39	2	16	21	4	1
Bureau	6	From Mineral to Ill. Rt. 88	1-1-51 to 1-1-52 1-1-53 to 1-1-54	15	-	4	11	9	1	6	2	1	1
Bureau	92	From Ohio to US 34 north of LaMoille	1-1-48 to 10-1-49 1-1-50 to 10-1-51	16	-	2	14	11	1	1	9	5	-
Carroll	72	From Lanark north & east	8-1-50 to 5-1-52 1-1-53 to 1-1-54	15	1	5	9	11	--	1	10	1	-
Champaign	45	From 1½ miles south of Champaign south	6-1-48 to 6-1-51 9-1-51 to 9-1-53	86	5	28	53	47	-	23	24	11	4
Christian	51	From Ill. Rt. 16 east of Pana north to county line	1-1-51 to 1-1-52 1-1-53 to 1-1-54	27	2	12	13	18	1	12	5	6	2
DeWitt	51	From Clinton south	9-1-50 to 1-1-52 9-1-52 to 1-1-54	37	1	14	22	14	-	9	5	5	3
DeWitt	54	From Ill. Rt. 48 north to county line	5-1-49 to 5-1-51 9-1-51 to 9-1-53	17	-	9	8	14	1	5	8	9	1
Effingham	40	From Funkhouser west	1-1-48 to 9-1-49 1-1-50 to 9-1-51	48	2	13	33	31	2	13	16	8	3
Franklin	37	From Benton south to west Frankfort	1-1-48 to 6-1-49 1-1-50 to 6-1-53	20	-	12	8	20	-	12	8	3	2
Iroquois	45	From Onarga south	10-1-48 to 5-1-51 9-1-51 to 4-1-54	67	4	25	38	58	1	26	31	18	22
Jackson	127	From Murphysboro north	7-1-50 to 3-1-52 8-1-52 to 4-1-54	24	3	11	10	18	1	9	8	6	4
Jefferson	37	From north county line to south county line	5-1-48 to 5-1-51 9-1-51 to 9-1-53	108	2	49	57	102	2	39	61	22	13
LaSalle	51	From Oglesby south	10-1-50 to 4-1-52 10-1-52 to 4-1-54	36	-	18	20	22	1	9	12	6	-
Madison	140	From Alton to Alhambra	9-1-50 to 4-1-52 9-1-52 to 4-1-54	63	2	38	43	70	3	29	38	9	1
Marion	50	From Sandoval to 2 miles west of Salem	1-1-48 to 11-1-49 1-1-51 to 11-1-52	37	1	10	26	29	1	13	15	11	7
McLean	51	From Heyworth north to US 66 at Bloomington	9-1-50 to 4-1-52 9-1-52 to 4-1-54	39	1	19	19	33	2	15	16	8	4
Montgomery	16	From Hillsboro north	8-1-50 to 4-1-52 8-1-52 to 4-1-54	18	1	12	5	27	1	15	11	3	4
Peoria	116	From Peoria west	8-1-50 to 4-1-52 8-1-52 to 4-1-54	73	2	37	34	46	-	21	25	9	2
Saline	45	From Harrisburg north to Eldorado	7-1-48 to 7-1-50 8-1-51 to 8-1-53	30	4	8	18	26	1	11	14	8	1
Saline	45	From Eldorado north	10-1-49 to 10-1-51 1-1-52 to 1-1-54	28	1	9	18	12	-	6	6	7	3
St. Clair	50	From Lebanon west approximately 10 miles	1-1-51 to 4-1-52 1-1-53 to 4-1-54	68	5	34	29	34	1	17	16	16	6
			Total	935	37	386	512	691	22	308	361	175	91

time, length, and traffic volume are combined in order to compute the accident rates. The final step consisted of computing the percent of improvement in the accident rate and weighing the results.

Numeric Counts

There can be little doubt that widening of pavements had a beneficial effect upon traffic accident experience, since all but two of the sections studied had fewer accidents after widening than before. The numeric counts are summarized below from the totals of Table I.

NUMBER OF ACCIDENTS ON 22 SECTIONS

	Before Widening	*After Widening*	*Percent Reduction*
Fatal Accidents	37	22	40.5
Injury Accidents	384	308	19.8
Property Damage	514	361	29.8
Total	935	691	26.1
Narrow Pavement Contributed	176	84	52.3

Accident Rates

In considering the accident rates on these sections it is well to begin with a point of reference. In 1953, the accident rate for Illinois rural state highways was 3.0 accidents per million miles traveled. In this study, intersectional, entryway and barricade accidents were deducted, and if these are deducted in computing the statewide rate, the rate drops from 3.0 to 2.0.

TABLE II. ACCIDENT RATE DATA

LOCATION			DATA						
County	Route	Description	Item number	Period in Years	Length in Miles	No. of Acc.	Traffic Volume	Acc. Rate	% Improved
Adams	104	From Quincy to Liberty	1	2.00	10.0	41 39	1500 2000	2.3 1.7	26
Bureau	6	From Mineral to Ill. Rt. 88	2	1.25	7.5	15 9	2000 2000	2.2 1.3	41
Bureau	92	From Ohio to US 34 north of LaMoille	3	1.75	9.4	16 11	1100 4600	1.9 1.1	42
Carroll	72	From Lanark north 4 east	4	1.75	9.5	15 11	1200 1400	1.9 1.3	32
Champaign	45	From 14 miles south of Champaign south	5	2.00	10.8	86 47	3250 4300	3.4 1.5	56
Christian	51	From Ill. Rt. 16 east of Pana north to county line	6	1.25	13.5	27 18	1930 2300	2.3 1.5	35
DeWitt	51	From Clinton south	7	1.58	6.8	37 11	2550 3000	3.7 1.2	67
DeWitt	54	From Ill. Rt. 48 north to county line	8	2.00	8.6	17 14	2000 2600	1.4 0.9	36
Effingham	40	From Funkhouser west	9	1.67	8.7	48 31	2825 3300	3.2 1.8	44
Franklin	37	From Benton south to West Frankfort	10	1.25	5.5	20 20	3775 4250	2.1 1.9	10
Iroquois	45	From Onarga south	11	2.58	12.5	67 58	2050 3350	2.8 1.5	46
Jackson	127	From Murphysboro north	12	1.67	11.5	24 18	2225 2350	1.5 1.1	27
Jefferson	37	From north county line to south county line	13	2.00	20.0	108 102	2950 3500	2.5 2.0	20
LaSalle	51	From Oglesby south	14	1.50	11.4	20 22	2310 2800	1.4 1.3	7
Madison	140	From Alton to Alhambra	15	1.58	11.6	83 70	2820 3550	2.5 1.7	32
Marion	50	From Sandoval to 2 miles west of Salem	16	1.83	6.3	37 29	4200 5150	2.1 1.3	38
McLean	51	From Heyworth north to US 66 at Bloomington	17	1.66	9.4	39 33	3140 3800	2.2 1.5	32
Montgomery	16	From Hillsboro north	18	1.66	13.4	18 27	1500 1800	1.5 1.8	20-
Peoria	116	From Peoria west	19	1.66	17.8	73 46	4100 4250	1.6 1.0	37
Saline	45	From Harrisburg north to Eldorado	20	2.00	7.3	30 26	3200 3950	1.8 1.2	33
Saline	45	From Eldorado north	21	2.00	7.3	28 12	2350 2600	2.2 0.9	59
St. Clair	50	From Lebanon west approximately 10 miles	22	1.25	10.5	68 34	4600 6000	3.1 1.2	61

The average rate for the 22 sections prior to the pavement widening was 2.3 which in itself may indicate that, from an accident standpoint, these sections were in need of improvement.

The average rate after pavement widening was 1.4 and the reduction in rate amounted to 39 percent. In the numeric count, the reduction in the number of accidents was 26 percent. The greater reduction in the accident rate is accounted for by the fact that traffic volume was higher in all of the after-periods except in one section where it remained constant.

Amount of Improvement

Examination of Table II reveals that the extent to which the accident rates improved was, by no means, uniform for the 22 sections. The maximum improvement was 67 percent for Item 7 whereas the accident rate for Item 18 did not improve and was 20 percent higher after widening. From the accident records there were no reasons apparent why there should be such a wide disparity in the accident experience on these two sections. This difference may become a subject for further study later on, but for the present it may be sufficient to note that traffic volume in the after-period was 3000 vehicles on the favorable section, but only 1800 on the adverse section.

A relationship between the amount of improvement, the traffic volume, and the accident rate was established by grouping the various sections together by original accident rate from low to high. This grouping is shown in the table below along with the average amount of improvement and average original traffic volume for each group.

Original Accident Rate	*Number of Sections*	*Group Average Percent of Improvement*	*Group Average Original Traffic Volume*
Less than 1.5	2	21.5	2170
1.5 - 1.9	6	25.2	2284
2.0 - 2.4	7	34.4	2700
2.5 and up	7	46.6	3006

This table indicates that widening becomes more effective as the original accident rate and traffic volume increase.

Summary

The purpose of this study was to discover what effect the widening and resurfacing of pavements had on the traffic accident experience. While this was not an exhaustive scientific study, much time was spent reading records of accidents, compiling data, and analyzing the results. The condition of utilizing only straightaway accidents must also be borne in mind, but it is believed that within these conditions the results may be accepted for practical application. Briefly stated, the results of the study were that:

1. After pavement widening, the contribution of narrowness of pavement to accidents declined over 50 percent.
2. After pavement widening the number of accidents was reduced by more than one-fourth.
3. In terms of accident rates, hazards were reduced nearly 40 percent after pavement widening.
4. Widening is more effective on sections having higher accident rates and traffic volume. Improvement upwards of one-third can be expected where accident rates above 2.0 are in combination with traffic volumes above 2700.

TRAFFIC NEWS

Voorhees Receives Past Presidents' Award

Alan M. Voorhees, Traffic Planning Engineer on the staff of the Automotive Safety Foundation, Washington, D. C., received the "Past Presidents' Award for Merit in Traffic Engineering" for 1955

Alan M. Voorhees

it was announced at the Founders' 25th Birthday meeting of the Institute of Traffic Engineers in Pittsburgh in October.

Mr. Voorhees' paper entitled "A General Theory of Traffic Flow" was presented at the first technical session at the recent annual meeting, and will be printed as a separate Institute publication and distributed to the entire membership.

A native of New Jersey, Mr. Voorhees received a civil engineering degree from Rensselaer Polytechnic Institute, and a master's degree in city planning from the Massachusetts Institute of Technology.

He was City Planning Engineer of Colorado Springs, Colo., before joining the Foundation, and has worked extensively in the fields of urban transportation and research, and on the subject of the economic impact of parking on business.

Since formation of the National Committee on Urban Transportation, Mr. Voorhees has served as consultant to the staff director of that organization. A member of the Institute of Traffic Engineers and the American Institute of Planners, he is a graduate of the Yale Bureau of Highway Traffic.

The Past Presidents' Award for Merit in Traffic Engineering is intended to en-

(Continued on page 119)

Miss Jackson Elected to Membership

Not only did the Annual ITE Meeting in Pittsburgh last October set a new record for interest and attendance in honor of the Founders' 25th Birthday, but it also marked the admission of the

Elizabeth A. Jackson

third woman member in the history of the Institute of Traffic Engineers when the Board elected Miss Elizabeth A. Jackson of Chicago to Junior membership. The first woman member was Miss Inez Rolph, Charter Member Affiliate, who resigned in 1936. Miss Margaret Woolverton was elected Junior Member iln 1943 and is currently the Institute's "first lady" full Member Mrs. Margaret W. Savage.

Miss Jackson is a Transportation Planner for the City of Chicago Plan Commission where she has been employed since receiving her degree in Civil Engineering from the University of Wisconsin a year and a half ago. The daughter of Mr. and Mrs. Edwin Jackson she was born April 26th during the great depression on her parents' farm at Mineral Point, Wisconsin.

Although none of her family has ever been associated with the engineering profession, her fondness for mathematics gained during Mineral Point school days, coupled with an inborn desire for an active role in creation of material structures, led her to enroll in the University's School of Engineering. Despite working to support herself all through college she still found time to serve as story editor of the college's "Wisconsin Engineer" magazine; Secretary of the ASCE student chapter; Vice-President of

(Continued on page 117)

Safety Aspects of the Garden State Parkway

The Garden State Parkway in New Jersey has probably the most unique safety record among highways in the nation and world.

This past July when a record volume of approximately six million toll-paying vehicles rode the Parkway, there were three births reported on the new superhighway and only one traffic death.

What is perhaps more, during the first six months of 1955 a weekly average of only three personal injury accidents was reported on the New Jersey scenic route.

In its first year of major or full operation between August 1, 1954, and July 31, 1955, there were 27,000,000 vehicle toll collections and only seven traffic fatalities—one of whom was a surveyor working on the road and another a trespassing pedestrian.

The 164-mile superhighway, which extends almost the full length of New Jersey from Paramus to Cape May along the State's shoreline, has been acclaimed for its beauty and safety by various visitors from as far away as Germany and Switzerland.

The New Jersey Highway Authority, which built and operates the Parkway, has attributed the Parkway's outstanding safety record for the most part to the cooperation of motorists. The Authority recognizes that all advanced safety devices and designs would be a total waste without sensible drivers.

But there are many factors in the construction and operation of the Parkway which probably contribute greatly to the safety record.

First, the superhighway was designed to handle 70-mile-per-hour speeds, but the limit has been set at 60 except where otherwise posted lower. Secondly, a force of New Jersey State Police has been assigned to patrol the Parkway around-the-clock to promote safety at all times.

Within the Authority's organization, all toll collectors are strictly instructed to treat motorists with complete courtesy so that the driver's frame of mind is a safe one. Then too, a safety committee has been set up by the Authority

among its staff of executives to keep a sharp eye out for any possible safety hazards on the Parkway and to correct them.

Engineering-wise, however, the Parkway shows the best reasons why it is a safe road—possibly the safest in the world. A rundown of those reasons follows:

1. There are separate roadways of two-to-three lanes each for northbound and southbound traffic. The borders of the roadways are painted white with millions of tiny beads blended in to reflect at night. Broken white lines set off each lane in each roadway, also with reflective attributes.

2. The center island between the northbound and southbound roadways ranges between 100 and 600 feet in width along most of the Parkway stretch. Only in the heavily-populated northern New Jersey metropolitan areas does the Parkway's center island taper down to the conventional width. But even there in some spots, the center island resembles a football field in width.

3. The width plus the natural and landscaped vegetation in the center island make it an effective barrier against any contact between opposing traffic. Headlight glare is out in most areas because of the center island; and it is minimized in other areas by rustic fencing with baffles which practically eliminate the distracting and dangerous illumination from opposing traffic.

4. Crossroads are overpassed or underpassed by the Parkway to permit a steady, uninterrupted ride along the course of the northbound and southbound roadways.

5. Gentle grades and gradually sweeping curves are common along the Parkway to keep the motorist alert to his driving. The Parkway is far from a straight level line.

6. There are across-the-road toll plazas at nine scattered spots along the Parkway to break up the monotony of long-distance travel. These barrier-type toll plazas also permit motorists to get direct information on road conditions ahead from a human attendant. Such necessary information is not left to signs which may be missed by the carefree motorist.

7. Signs are limited in number along the Parkway so as not to confuse and distract the motorist unnecessarily. They are reflective so that reading at night presents no difficulty or traffic hazard. They are placed well in advance of exits so that the motorist has proper warning and advice. All billboards and advertising matter are banned from the parkway so that there will be no such distraction to create either a traffic hazard or scenic ugliness.

8. A special strip of corrugated concrete has been laid down on the right border of the northbound roadway along the heavily-travelled section from Asbury Park to the Raritan River (the Amboys across from New York City). This strip constitutes what is known as "the singing shoulder" since it resounds with an audible warning to motorists when they stray off the roadway and run onto its corrugations. It is also highly reflective at night to guide motorists. This section serves the heavy volume of motorists returning from New Jersey's busy shore resorts to the metropolitan areas of northern New Jersey and New York.

9. Delineators are placed only at special spots along the Parkway where such illumination might be particularly required, especially on any bends in the road. The feeling of Parkway engineers has been that excessive delineators—placed every few feet or so—would hypnotize motorists at night with their reflections rather than guide them safely. Each interchange, however, is fully illuminated with overhead lighting.

10. Trucks are prohibited from the heavily-travelled northern sections of the Parkway. Such vehicles are permitted only south of Lakewood in the rural, resort areas of the Jersey coast. Not one accident involving a truck or bus was reported on the Parkway during the first 1½ years of toll operation. Buses are barred from local travel along the Parkway.

11. Special pedestrian overpasses and fencing have been erected in the populated metropolitan areas where the Parkway right-of-way is confined and where children might otherwise have access to the roadways.

12. Hitch-hikers and all pedestrians are excluded from the Parkway as are bicycles.

13. There are many stops along the Parkway route — restaurants, gasoline stations and picnic areas—where a motorist can get out for a stretch, a rest or a snack. The eating places are open 24 hours a day and are scattered along the Parkway course.

Salaries of College Graduates at NYU

Graduates of the New York University College of Engineering in 1955 received an average of five definite job offers each, according to a report issued by Dean Thorndike Saville.

The average starting salary for the June graduating class was $401 a month, an increase of eleven and one-half percent over the figure for the Class of 1954. Aeronautical and industrial engineers were the highest paid. The average for each of these two groups was $430 a month.

Average beginning salaries in private industry were higher than those offered by government agencies employing engineers—$405 per month as against $338.

"The survey indicates clearly that competition for engineering graduates is growing," said Dean Saville. "Salaries advanced again and companies continued recruiting on the campus months before the end of the school year. Because of its relatively lower salaries, civil service—local, state, and federal—continued to be at a disadvantage in attracting engineering employes."

Starting salaries have increased in each of the last eight years, with the exception of 1949. The 1955 average is 76 percent higher than that of 1947 ($227).

This year's survey was based on personal interviews with 122 of the 185 seniors who registered last spring with the NYU Office of Placement Services.

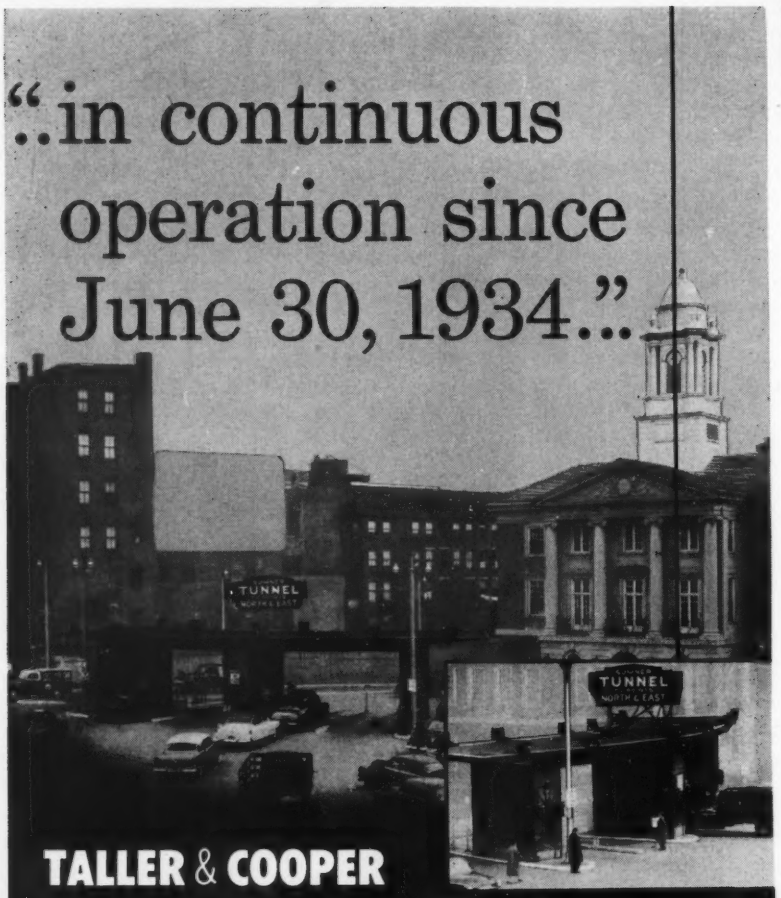
MISS JACKSON ELECTED

(Continued from page 116)

the University's City and Regional Planning Club; and to be graduated with honors, including election to Chi Epsilon honorary civil engineering fraternity (which in her senior year made her Secretary) and Tau Beta Pi, honorary engineering fraternity.

In addition to ITE membership Miss Jackson is a member of the American Society of Civil Engineers, and the Western Society of Engineers.

In her leisure time she designs and makes her own wardrobe to satisfy her liking for clothes design and pursues her hobbies of skiing in winter, and sailing in summer. She admits that her hope chest contains, among other things, an ambition to eventually associate herself with the traffic engineering consulting field.



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AAA Proposes Highway Program Financing

A resolution calling for any expanded highway construction program to be financed from existing Federal automotive excise taxes was passed by the American Automobile Association at its recent national convention in Washington, D. C.

While reiterating its long-standing opposition to Federal automotive excise taxes, the AAA added:

"So long as the Federal government, over the vigorous protest of the AAA, continues to impose automotive excise taxes, the association urges that an amount at least equal to the entire proceeds from all such taxes be applied to Federal-aid highways."

Observing that "a major emergency exists as regards the national system of interstate highways," the AAA declared that the Federal government should pay "not less than 75 per cent" of the cost of an expanded highway construction program.

Regarding the financing provisions of any road building plan, the group stated it "favors pay-as-you-go financing . . . but recognizes that credit financing is entirely appropriate whenever improvements cannot be feasibly financed on a pay-as-you-go basis."

Colonel Bingham Retires

Colonel Sidney H. Bingham, Executive Director and General Manager of the New York City Transit Authority, has announced that he will retire after 39 years with the New York subway system to go into private consulting engineering practice. Colonel Bingham is a member of the American Institute of Consulting Engineers and the New York Association of Consulting Engineers. He is also a member of the American Society of Mechanical Engineers, the Municipal Engineers of the City of New York, the New York Society of Professional Engineers and a number of other engineering societies in Europe and South America.

Mr. Charles L. Patterson, Chairman of the New York City Transit Authority, simultaneously announced that it was with regret that the members of the Transit Authority accepted Colonel Bingham's decision to retire and have made arrangements with him to be available as consultant to the Authority, both on projects in the capital budget program as well as plans for the future.

NEW APPOINTMENT

Yale Bureau Adds Huber

Matthew J. Huber (Jun. Mem., ITE) resigned as Assistant Professor of Civil Engineering at Michigan State College to join the staff of the Bureau of Highway Traffic of Yale University last September. In addition to his research work he is teaching one course.

Matthew J. Huber

Reared in Watertown, Wisconsin, where he was born in 1924, Huber entered Marquette University at the age of 18. He was awarded his B.S. degree in Civil Engineering in 1945. Most of the following year was spent in military service and upon discharge he accepted employment on a survey party of the Wisconsin State Highway Department for a short while. A few months later he was employed by the City of Milwaukee as a Project Engineer on street construction projects.

In September 1948 he was appointed Assistant Professor of Civil Engineering at Michigan State College. Continuing his education by undertaking graduate studies during his spare time, he received a Master's degree from that school in 1950. Michigan State gave him a leave of absence in 1952-53 to study at the Yale Bureau, from which he received his Certificate in June of 1953.

A registered Professional Engineer in the State of Michigan, Huber is active in the Institute of Traffic Engineers, and holds membership in the Highway Research Board and American Road Builders' Association.

Married to the former Beverly McKay of Milwaukee, the couple are the parents of three children.

Obituary

Ernest Goodrich, a Founder of the Institute, Dies

Ernest Payson Goodrich (Honorary Mem., ITE), Founder Member and first President of the Institute of Traffic Engineers, died on October 9 in the Brooklyn Hospital from injuries received from a fall in his home three weeks before.

During his very active career, he conducted traffic and parking surveys in 50 United States municipalities, London, England; Bogota, Columbia; and Nanking, China. Mr. Goodrich presented many professional lectures and papers on all phases of traffic engineering. He was a delegate to the first Hoover Conference on Street and Highway Safety, and had appeared as an expert witness in a number of prominent litigations.

A native of Detroit where he was born in 1874, Mr. Goodrich received a B.S. degree from the University of Michigan in 1898. He served as a commissioned officer in the United States Navy from 1899-1903. For four years he was chief engineer at the Bush Terminal Company and then served in the Manhattan Department of Public Works until 1916.

Shortly thereafter he began his own consulting service, serving as a consultant for the Albany Port Commission from 1924-33 and then as commissioner and chief engineer at the New York Department of Sanitation. During 1934 and 1935 he was Professor of Engineering Economics at New York University. He continued consultant practice with offices in New York until the time of his death.

In addition to his professional activities in the Institute of Traffic Engineers, he was a former director of the American Society of Civil Engineers, President of the American Institute of Consulting Engineers, Past Director of the Society of Terminal Engineers, and Past Director of the American Institute of Planning.

He is survived by his wife; two brothers, Francis L. D. Goodrich and Ralph D. Goodrich; and a sister, Miss E. May Goodrich.

His unselfish contributions and service to the Institute and to the entire engineering profession has been inspiring, and will not soon be forgotten.

VOORHEES RECEIVES AWARD

(Continued from page 116)

courage the conduct and reporting of independent and original research. It is an annual award and the recipient is determined by a committee of judges with the immediate past president as chairman. Carlton C. Robinson in 1951, Edward Hall in 1952 and John Baerwald in 1953 were the recipients of this award. No award was made in 1954.

When You Change Your Address

. . . please notify us promptly. Your copies of "Traffic Engineering" will then reach you without delay and without interruption.—Traffic Engineering Magazine, Strathcona Hall, New Haven 11, Conn.

LOOKING AHEAD

JANUARY 11-14, 1956—MIAMI BEACH, FLA.
Annual convention of the American Road Builders' Association.

JANUARY 16-20, 1956—WASHINGTON, D. C.
Annual meeting of the Highway Research Board.

MARCH 4-6, 1956—ATLANTA, GEORGIA.
Southern Safety Conference and Exposition, Biltmore Hotel.

Annual ITE Meeting Reports

The following reports were presented at the Annual Business Meeting in Pittsburgh, October 24th, 1955.

PRESIDENT PORTER'S REPORT

The year 1955—is a milestone, and further, it is believed the beginning of a new chapter in the life of the Institute.

We are now at the threshold of a new era in an exceptionally promising future.

During the past Institute year your Board has met four times. Once in Kansas City, January of this year in Washington, D. C.—our June meeting in Atlanta, Georgia, and then in Pittsburgh.

We have followed an adopted policy of holding our board meetings in different districts or in the headquarters city of one of our local chapters. It is our feeling that this allows members to become better acquainted with their board and at the same time such a meeting is usuallly of assistance in stimulating interest in the profession in that particular area.

During 1954 we had more than 140 new members added to the Institute roster and I hope that many of them are attending this meeting today.

Our Technical Council has met three times during the past year and several interesting projects have been completed with summarized information made as supplements in the Technical Notebook or as articles in Traffic Engineering. More about the Technical Division of the Institute will be reported to you a little later by the head of the Technical Division, Charles Prisk.

The Technical Council with its 7 department heads, under which 31 Committees are working on subjects relating to highway transportation, is the backbone of the Institute and contributes greatly to the advancement of our profession. Once again the Technical Council handled the arrangements of the technical sessions which means the technical body of the Institute developed the content of the sessions, subject to board approval of course, and we are quite sure you will find that the next two days of scheduled meetings will be most interesting and informative.

Perhaps you might not consider this important, but we now have a lapel pin. Several members wearing the pin have been asked what it represents. But, to me the approval of this pin is important, for it has given these members an opportunity to tell just what the Institute is—

However, the two most important accomplishments this past year were the addition to our staff of an assistant executive-secretary and the moving of our headquarters. A little later, when our executive secretary makes his report he will introduce our assistant Executive-Secretary to you. The Institute some time during the middle of next year will move its national headquarters to Washington, D.C. in the new National Society of Professional Engineers Building. Since many of the 60 national organizations and engineering societies with which we cooperate have their headquarters in or near Washington our active liaison and cooperative effort can be broadened considerably.

In addition to the growth of the headquarters staff and the increase in physical facilities in the near future, it is anticipated that the magazine will continue to improve and now adequately serve its purpose to the traffic engineering profession. The Board of Direction, by obtaining additional staff, have taken a step in this direction. However, the magazine is, and will continue to be your magazine. I cannot over stress its importance. The staff is making every effort to improve the magazine, but they need your help. If you are in the process of preparing a technical story which you feel will be of value to the profession call its attention to the staff.

Please give TRAFFIC ENGINEERING first priority.

Another, perhaps the most important activity was the ITE work conference held last Friday and Saturday—which was attended by 40 members of the Institute. The purpose of this conference was to discuss future traffic problems and the traffic engineering profession. We will hear more about this conference from Burton Marsh.

The progress and accomplishments during my term as President have been the result of splendid cooperation and leadership of the board and those serving on the various committees. My sincere thanks to all of you.

Respectfully,

HARRY PORTER, JR.

Report of Old Board of Direction Meeting October 23-24, 1955

The Board of Direction of the Institute of Traffic Engineers met at the William Penn Hotel in Pittsburgh, Pennsylvania, on October 23-24, 1955, with all officers and directors present. The Board deliberated eight hours Sunday and three hours Monday. Important actions taken by the Board include:

1. Appointed a committee composed of Directors Havenner, Sielski and Malo to study the structure and operations of the technical committees of the Institute.

2. Recommended the establishment of a committee to study the problem of improving public relations especially with reference to Annual Meetings.

3. Received a report from the Executive Secretary in regards to the 1954 traffic engineering awards, headquarters personnel, move to permanent headquarters and attendance at the Western Section annual meeting.

4. Received a report from Messrs. Marsh and Mickle regarding ITE Work Conference held October 21-22.

5. Requested the Policy Committee to make a comprehensive review of the annual Traffic Engineering Award program and report to the next Board meeting in January.

6. Authorized retaining a legal advisor to assist with the necessary leasing arrangements for Headquarters office space in the National Society for Professional Engineers building in Washington.

7. Directed the Executive Secretary to study the need and desirability of paying for technical articles for TRAFFIC ENGINEERING magazine.

8. Approved the magazine's new advertising rate card to become effective January 1, 1956.

9. Approved the transfer of 16 Juniors to Associates and 6 Associates to full Members. Elected to membership 30 Juniors, 14 Associates, 2 full Members and 3 Affiliates, thereby increasing the total membership to 954.

10. Received and approved a report of the Policy Committee reviewing the By-Laws regarding Honorary Members

and Affiliates. Agreed with Committee's recommendation that it is undesirable to confer a posthumous Honorary Membership.

11. Suggested the appointment of a Committee to review potential Affiliate possibilities and to encourage an increase in the number of Affiliates.

12. Unanimously voted to invite Founder Member, Past President Burton W. Marsh to accept Honorary Membership.

13. Approved the dates for the 26th Annual Meeting of the Institute to be held September 24-28, 1956, in San Francisco, California, with headquarters at the Mark Hopkins Hotel.

14. Approved the Constitution and By-Laws which had been adopted by the new Ohio Section, authorized last June. Validated the Section's election of Harold G. Eckhardt, President; George W. Howie, Vice-President; and J. A. Carrothers, Secretary-Treasurer, as the Section's first officers.

15. Discussed the preliminary report of Directors Havenner and Wetzel on the preparation of a Manual on Conduct of Annual Meetings. Urged that final report be completed by January meeting.

16. Approved the appointment by the President and incoming President of the personnel of the Committee on Election Tellers, Committee on Annual Meeting Resolutions, and Committee on 1957 Annual Meeting Site Selection.

17. Received a report by Mr. Siegel pertaining to the Technical Notebook and the questionnaire which was recently sent out to all members showing that more than 400 replies were received with approximately 90 percent being willing to pay for a new edition.

18. Discussed the Institute's participation in In-Service Training Programs with special reference to the Pennsylvania Conference to be held in October 1956.

19. Accepted the resignation of one Member and one Associate Member.

20. Authorized further exploration of possible cooperation with the Engineers Joint Council.

21. Agreed to contract with the Jess M. Laughlin Company, Los Angeles, by which Laughlin Company becomes TRAFFIC ENGINEERING magazine's Advertising Representative for the State of California.

21. Recognized the contributions of Immediate Past President Donald M. McNeil, Secretary-Treasurer Thomas J. Seburn and Director Robert S. Holmes, and adopted a resolution of appreciation to these three gentlemen who are retiring from further service with the Board.

T. J. SEBURN
Secretary-Treasurer

Report of New Board of Direction Meeting October 25, 1955

The new Board of Direction of the Institute of Traffic Engineers met in the William Penn Hotel in Pittsburgh, Pennsylvania, on October 25, 1955, with all officers and directors present except the director of District No. 6 who had not at that time been appointed. This meeting lasted for three hours on Tuesday evening. Important actions taken by the new Board include:

1. Appointed Herbert C. Higgins, Office Engineer for the Washington Department of Highways, as Director of District No. 6 to serve the unexpired term (until October, 1956) of Mr. Havenner, elected Vice-President.

2. Requested that the Policy Committee study the problem of Sustaining Organizations with emphasis on the possibility of extending invitations to highway user and material groups.

3. Agreed to sponsor and support the University of California Institute of Traffic Engineering & Transportation conference on Simulation of Traffic Flow which will be held at Los Angeles just prior to the next ITE Annual Meeting.

4. Concurred with the amendment to the section's By-Laws in regards to the date of election of officers, which was recently adopted by the Indiana Section.

5. Approved the appointment by President Prisk of Vice-President McMonagle (Chairman), Secretary-Treasurer Sielski, Directors Higgins and Executive Secretary Todd to the Board's Sub-committee on Public Relations.

6. Adopted five Annual Meeting Resolutions, reported elsewhere.

7. Selected Detroit, Michigan, as the site for the 1957 annual meeting.

8. Approved the appointments of the new Technical Division Department Heads as follows: Donald S. Berry, Department 2 Head; Walter H. Klaproth, Department 3 Head; J. Al Head, Department 5 Head; and Wayne N. Volk, Department 7 Head; and Robert J. Allen as Secretary of the Technical Council.

9. Authorized President Prisk to appoint Committees and Sub-committees between Board meetings.

10. Revised the membership of the Board Committee on Staff Personnel with Secretary-Treasurer Sielski as Chairman and Directors Wetzel and Gravelle as the other members.

11. Postponed until the January Board meeting any action in regards to a high level Work Conference.

12. Recommended that Vice-President McMonagle work with the Executive Secretary on future agendas of Board meetings.

13. Scheduled the next Board meeting for January 14-15, 1956, in Washington, D. C., with the possibility of beginning on Friday, January 13.

MATTHEW SIELSKI
Secretary-Treasurer

Annual Meeting Resolutions

The following Resolutions prepared by the special Committee on Resolutions were approved by the Board and adopted by the membership at the closing luncheon:

Resolution No. 1

WHEREAS, the arrangements for the accommodation and entertainment of the delegates, wives and guests have resulted in a most pleasant and profitable program for those attending the Founder's 25th Birthday Meeting of the Institute of Traffic Engineers, and

WHEREAS, the Technical Sessions in particular have been carefully arranged, instructive and inspiring, and

WHEREAS, the efforts exerted in behalf of the Birthday Meeting are now recognized as having been outstanding;

THEREFORE BE IT RESOLVED, that the entire membership of the Institute of Traffic Engineers express its sincere thanks to Michael J. Gittens, General Chairman, and the personnel of the several Local Arrangements Committees, and

BE IT FURTHER RESOLVED, that the membership of the Institute of Traffic Engineers express its compliments and warmest appreciation to Mrs. Donald M. McNeil and her committee for a splendid performance in entertaining the ladies, and

BE IT FURTHER RESOLVED, that the membership of the Institute of Traffic Engineers extend its thanks also to the many additional friends and supporters who have contributed so much to the success of this Founder's 25th Birthday Meeting.

Resolution No. 2

WHEREAS, the successful progress achieved by the Institute of Traffic Engineers during the past year is largely due to the conscientious efforts of its officers, and particularly the leadership of its chief executive, and

WHEREAS, the devotion to the Institute and sincere interest in its welfare demonstrated by the immediate Past President has been truly outstanding;

THEREFORE BE IT RESOLVED, that the membership of the Institute of Traffic Engineers express its heartfelt gratitude to Harry Porter, Jr., at this time of his retirement from the Presidency, for his many hours of faithful service to the organization, his unswerving devotion to the objectives of the Institute, and to the advancement of the traffic engineering profession.

Resolution No. 3

WHEREAS, twenty-five years ago in Pittsburgh, Pennsylvania, a small group of far-sighted men formed an organization in the field of street and highway traffic operations, and

WHEREAS, these men and other pioneer traffic engineers who joined with them in this new organization built a sound technical foundation for continuing growth and professional development, and

WHEREAS, this fledgling organization has grown until the membership today numbers nearly one thousand and the contributions of its membership have been the primary influence in the advancing science of traffic engineering;

THEREFORE BE IT RESOLVED, that the present members of the Institute of Traffic Engineers record and express their appreciation to these Founders for their foresight and imagination, and assure them of a continuing devotion to the objectives and principles envisioned by these pioneers.

Resolution No. 4

WHEREAS, an increasing backlog of highway needs is everywhere apparent throughout the nation, and

WHEREAS, the Congress in its last session gave extended and serious consideration to the evaluation of these needs and to methods for reducing this backlog, and

WHEREAS, further delay in the initiation of a program of needed highway improvements can seriously impair the dynamic economic growth of the nation;

THEREFORE BE IT RESOLVED, that the Institute of Traffic Engineers urge that the Congress at its next session take action on an accelerated and expanded highway construction program, with special emphasis on the financing of the 40,000 mile Interstate Highway System, which includes many urban arterial improvements of high priority.

Resolution No. 5

WHEREAS, at this, the Founder's 25th Birthday Meeting of the Institute of Traffic Engineers, attention has been forcefully called to the growing traffic and transportation problem, and

WHEREAS, the need for concerted and well coordinated effort on the part of all concerned agencies and professions is truly challenging:

THEREFORE BE IT RESOLVED, that the Institute of Traffic Engineers call upon its membership to accelerate the productivity of its administrative and technical committees, and

BE IT FURTHER RESOLVED, that a closer working relationship with allied professional organizations and with other responsible groups in the highway transportation field be established as a primary concern of the Institute of Traffic Engineers.

Respectfully submitted,

KARL A. BEVINS
Chairman
DAVID M. BALDWIN
DONALD S. BERRY
NATHAN CHERNIACK
EDMUND R. RICKER

Report of Executive Secretary

In past years I have tried to give you a complete report on the detailed operations of the national Headquarters office. I hope you will bear with me if I depart from that practice this afternoon in order that this report be brief. Later we are to hear another report on a matter which is far more vital to our profession and consequently of greater interest to you than any detailed report of mine could be.

The calendar year 1954 was good financially as Mr. Seburn has told you already. Since we have taken on more obligations we do not expect to do as well in 1955 but we still hope to break a little better than even. Contingent upon our financial operations is the outcome of a most important administrative decision which was reached last year. The wisdom of the Board of Direction's policy to guide the conduct and financing of our Annual Meetings is on trial for the first time with this Pittsburgh Meeting. For the first time the Board is paying $2,500 toward the expense of this meeting, the overall cost of which has been limited to approximately $10,000. Of this sum only about 15% had to be raised from contributions solicited by the Local Arrangements Committee. For the first time the Board has taken a very active part in planning for both your education and your entertainment. The Local Arrangements Committee, which does all the work, has sought the advice and approval of the Board on all questions of importance. The same may be said of the Technical Sessions Committee under the guidance of Messrs. Evans and Yost.

So if you find the show here pleasing and enlightening, it is important for you to tell not only Mr. Gittens and his associates, but the members of the Board as well. In this way, and in this way only, will the Board learn your likes and dislikes in the conduct of Annual Meetings, which are so important now that the Board undertakes a much larger share of the supervision.

Two administrative decisions of great importance were made by the Board this year. The first of these was the employment of an Assistant Executive Secretary, to lighten my load, a relief that was most heartily welcomed by the writer. A little later on this young man will be introduced to you.

The second is the decision to move the national headquarters from New Haven to the District of Columbia. Arrangements are now being completed to rent the front half of the third floor of the new air-conditioned building being constructed for the National Society of Professional Engineers at 2029 K Street, N. W., Washington. We will move during the summer of 1956, thereby bringing to a close eleven years of occupancy of quarters most generously provided by the Yale Bureau of Highway Traffic.

Another item worthy of mention concerns the vastly increased activity of the Local Sections during the past year. About two-thirds of the national membership appear to participate in Section activity. There were eleven Sections and yesterday the Board gave its approval to the By-Laws of a twelfth — the new Ohio Section. During the year the eleven Sections held a total of 94 meetings attended by more than 2375 persons. The Annual Meeting of the Western Section at San Diego last June was a three-day affair which drew 181 men and 81 ladies, and the excellent technical sessions were on a par with the national meetings as was the entertainment. Par-

ticularly noteworthy was the activity of the Canadian Section which is one of the smallest and is spread over the largest area of any. Its 27 members and eight Section affiliates held six meetings attended by a total of 110 persons.

Three of the Sections publish interesting and informative newsletters each month, five others publish newsletters on a less regular schedule.

Perhaps the most encouraging factor of the year's operations was the growth of the membership. The unprecedented number of 239 applications were handled by the Membership Committee and the Board. This is an average of approximately one each working day. The Board approved 79 transfers and elected 146 new members representing a growth in membership of approximately 18 percent during the year. Invitations were extended to four Affiliates. Including those elected yesterday our total membership now stands at 954.

Altogether the progress of the Institute under the leadership of Harry Porter during the year he has been President has been most gratifying. One of President Porter's personal achievements is such an outstanding record and concrete demonstration of his devotion to his responsibilities in serving the welfare of the Institute that I feel I would be remiss if I did not call it to your attention. He was elected a Director on October 11, 1948, and has served on the Board continuously since that date. During these seven years the Board has held a total of 31 meetings. Meetings have been held in 12 different locations all over the United States. Harry Porter has attended each and every one of the 31 meetings! This is a record that cannot be matched and will probably never be surpassed.

M. M. TODD
Executive Secretary

Please

Patronize

Our

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POSITIONS AVAILABLE

CITY OF SPRINGFIELD MASSACHUSETTS

TRAFFIC ENGINEER

To direct an established Bureau of Traffic Engineering. Eight-year-old ordinance creating Bureau requires the Mayor to make appointment subject to confirmation by Aldermen, and specifies that appointee must be graduate of a recognized traffic engineering school, at least 25 years old, with not less than three years practice of traffic engineering, one year of which he must have been in responsible charge.

SALARY: $6300 to $7560 annually dependent upon age and qualifications.

Write:
Daniel B. Brunton, Mayor
City Hall
Springfield, Massachusetts

CITY OF CORPUS CHRISTI TEXAS

TRAFFIC ENGINEER

To organize a new Traffic Engineering Department. State is planning $70,000,000 of expressway and bridge projects in area.

REQUIREMENTS: College graduate with training and experience in traffic and planning.

SALARY: Approximately $8,000 dependent on ability and experience.

Apply:
Russell E. McClure
City Manager
Corpus Christi, Texas

CITY OF YAKIMA WASHINGTON

TRAFFIC ENGINEER

For traffic operations and planning.

REQUIREMENTS: Recent graduate engineer, preferably with specialization in traffic engineering.

SALARY: $6,000 per year.

Apply:
Grant E. Huey
Commissioner of Public Works
Yakima, Washington

CITY OF CINCINNATI

ASSISTANT UTILITIES ELECTRICAL ENGINEER

As second man in design, operation, and maintenance of city-wide program of street lighting and traffic signals, and other related work.

REQUIREMENTS: Electrical engineering degree with experience in traffic signal or street lighting work, or allied experience.

SALARY: $6375 to $7169 a year. Excellent fringe benefits, including retirement plan.

Write:
W. D. Heisel
Personnel Officer
Room 260 City Hall
Cincinnati 2, Ohio

CITY OF WICHITA KANSAS

TRAFFIC ENGINEER

To direct activities of Traffic Engineering Division under the Director of Service. Functions include traffic studies, installation and maintenance of traffic control devices, including parking meters and administration of street lighting program. Nineteen citizen member Traffic Commission to work with.

MINIMUM REQUIREMENTS: Engineering degree and basic knowledge of traffic engineering.

SALARY: $545-$655 per month. Fringe benefits include local and Social Security Retirement, vacation, sick leave, etc.

Apply:
George J. Fisher
Director of Service
Room 205, City Building

CITY OF KITCHENER ONTARIO, CANADA

MAY EMPLOY: First Traffic Engineer.

Write:
M. MacKenzie
Personnel Director
City of Kitchener

Section Meets at Pittsburgh

The Canadian Section was well represented at the Annual Meeting as can be seen from the photograph above. Front row, left to right: Bob Burton, Phil Ewart, Walt Macnee, Ray Desjardins, and John Connolly. Back row, left to right: Ed Ewens, John Walker, Eric Wiley, Sam Cass, Art Lomax, Les Pillar, Bob Campbell, Harry Clark, Len Nordby, W. H. Finnbogason, and Bill Strathopolous. Other persons attending meeting from Canada who were not in photograph were: Maurice Belanger, W. H. Clarke, Ken Crockett, J. G. Heselton, E. A. Horton, and Ken Vaughan-Birch.

RULES
TURN IN NUGGETS AT ANY SESSION OR HOLD FOR FOLLOWING SESSION
RULES
TICKET STUBS MAY BE REDEEMED ONLY DURING SESSION SHOWN ON STUB

Fun at the Pittsburgh Annual Meeting

Banker Don McNeil hands 30,000 nuggets to Mrs. Eugene Barton during Casino Party as Gene Barton (foreground) watches and Bill Canning (left), another banker, counts his deposits.

Sightseeing at Pittsburgh Annual Meeting

(Left to right) Nat Cherniack, Charlie Upham, Bob Burch, Mrs. Burch, Hank Osborne, Mrs. F. W. Hurd, Fred Hurd and Dwight Myers with their "top hats" during the U. S. Steel Mill Tour.

Membership Applications

The following applications have been received since the list of applicants published in October.

APPLICATIONS FOR TRANSFER

EWART, Philippe
Chief, Traffic Engineering Bureau
Quebec Roads Dept.
60 West St. James Street
Montreal, Quebec, Canada
October 6, 1955 for MEMBER grade

FEDERHART, James W.
Traffic Engineer
City of Saginaw
City Hall
Saginaw, Michigan
September 28, 1955 for MEMBER grade

HICKMAN, Harold L.
Traffic Engineer
City of Flint
615 Beach Street
Flint 3, Michigan
October 10, 1955 for ASSOCIATE grade

KELLY, Robert J.
Commissioner of Traffic Engineering and Parking
City of Cleveland
Room 400, 1404 East 9th Street
Cleveland 14, Ohio
September 30, 1955 for MEMBER grade

ZELL, Charles E.
Associate Highway Engineer
California Division of Highways
P. O. Box 1499
Sacramento, California
October 13, 1955 for ASSOCIATE grade

NEW APPLICATIONS

FINNBOGASON, Wilmar H.
Assistant Traffic Engineer
City of Winnipeg
Engineering Department
223 James Avenue
Winnipeg 2, Manitoba, Canada
October 18, 1955 for ASSOCIATE grade

FRY, Rolla Theran
Supervisor, Urban Traffic Studies
State Highway Comm. of Kansas
Masonic Building
Topeka, Kansas
October 24, 1955 for MEMBER grade

GILBERT, Alton K.
Junior Civil Engineer (Traffic)
City of San Diego
Room 256 Civic Center
San Diego 15, California
October 18, 1955 for JUNIOR grade

HENRY, Ellis C., Jr.
Assistant Traffic Commissioner
Room 327, City Hall
101 South Twelfth Street
St. Louis 3, Missouri
November 7, 1955 for JUNIOR grade

HEWTON, John T.
Signal Engineer
Municipality of Metropolitan Toronto
153 St. Clair Avenue
Toronto, Ontario, Canada
November 7, 1955 for JUNIOR grade

HOFFMAN, Lawrence J.
Traffic Engineer
City of Hammond
5925 Calumet Avenue
Hammond, Indiana
October 5, 1955 for ASSOCIATE grade

HUDSPETH, Vealess F.
Junior Traffic Engineer
Arkansas State Highway Department
Highway Building
Little Rock, Arkansas
October 7, 1955 for JUNIOR grade

JOHNSON, Alfred E.
Executive Secretary
American Association of State Highway Officials
917 National Press Building
Washington 4, D. C.
October 17, 1955 for MEMBER grade

KYRK, Dennis D.
Assistant Director
Office of Traffic Control
Room 501, City Hall
Oklahoma City, Oklahoma
October 31, 1955 for ASSOCIATE grade

LIFE, Neville W.
City Engineer
City of Port Arthur
Public Utilities Building
Port Arthur, Ontario, Canada
November 7, 1955 for JUNIOR grade

LOMAX, Arthur Henry
Traffic Coordinator
City of Hamilton
11 Robert Street
Hamilton, Ontario, Canada
October 3, 1955 for JUNIOR grade

(Continued on page 133)

Smiles a Welcome
Both Night and Day

State Entrance signs of "SCOTCHLITE" Reflective Sheeting extend a full color greeting to visiting motorists

All around the clock, State Entrance signs like the one above greet every visiting motorist with a *warm, bright smile!* By day, these crisp, sparkling signs of "Scotchlite" Sheeting extend their friendly message clearly . . . and the greeting doesn't disappear at dark. At night, where ordinary signs grow indistinct, signs of "Scotchlite" Sheeting really show their merit. Caught in the beam of approaching headlights, these signs *reflect light* back to the driver on the road . . . your message of greeting is delivered *in vivid full color,* just as it was during the day.

Signs of "Scotchlite" Reflective Sheeting are economical, too . . . there's no painting, and very little maintenance. Mounted on any hard, smooth surface, they'll outlast at least two proper paint cycles on an ordinary sign. Look into the advantages of "Scotchlite" Sheeting now. We'll be glad to send a FREE miniature State Entrance sign for *your* state. Ask the "3M" representative in your area, or write: Minnesota Mining & Manufacturing Company, Dept. GS-125, St. Paul 6, Minnesota. There's no obligation, of course.

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SCOTCHLITE
BRAND
REFLECTIVE SHEETING
3M
The terms "Scotchlite" and "Flat-Top" are registered trademarks of Minnesota Mining & Mfg. Co., St. Paul 6,

INSTITUTE OF TRAFFIC ENGINEERS

New Members and Transfers

Elected by Board of Direction October 24, 1955.

TRANSFERS

BALTAYAN, Ara M. (Associate)
Engineer
Automatic Signal Division
Eastern Industries, Inc., E. Norwalk
SEND MAIL: 97 Seneca Road
New Haven, Connecticut

BUCKMAN, T. Robert (Member)
Traffic Engineer
950 Jennings Street
Fort Worth, Texas

BURTON, Francis C. (Associate)
Traffic Engineer
P. O. Box 1293
Albuquerque, New Mexico

CHANDLER, Roger T. (Member)
Traffic Engineer
147 Fountain Street
Providence, Rhode Island

CONNER, Samuel H. (Associate)
City Traffic Engineer
City of Portland, Maine
SEND MAIL: Long Island, Maine

FINLAY, Redfield, Jr. (Associate)
Traffic Engineering Assistant
Department of Traffic
Los Angeles, California

FISCHER, Stewart C. (Associate)
Traffic Engineer
SEND MAIL: 567 Byrnes Drive
San Antonio, Texas

GILMAN, Roger H. (Member)
Director of Port Development
The Port of New York Authority
111 Eighth Avenue
New York 11, New York

GITTENS, Michael J. (Member)
Traffic Engineer
908 City-County Building
Pittsburgh 19, Pennsylvania

GRANZOW, Edward F. (Associate)
Traffic Analyst
142 North Arroyo Parkway
Pasadena 18, California

HANSEN, Robert J. (Associate)
Associate Highway Engineer
Department of Highways
Transportation Building
Olympia, Washington

KELL, James H. (Associate)
Jr. Research Engineer & Associate in Transportation Engineering
Institute of Transportation & Traffic Engineering
University of California
Berkeley 4, California

LEWIS, W. R. (Associate)
District Traffic Engineer
Department of Highways
Flemingsburg, Kentucky

LINDQUIST, Gordon G. (Associate)
Assistant Director
Safety & Engineering Dept.
Chicago Motor Club
66 East South Water Street
Chicago 1, Illinois

MEYER, Robert L. (Member)
Traffic Engineer
State Highway Dept.
Dept. of Roads and Irrigation
State Capitol
Lincoln, Nebraska

OAKES, Roy E. (Associate)
Acting Chief, Traffic Eng. Division
Department of Public Works
SEND MAIL: 3006 College Avenue
Berkeley 5, California

OLSON, Maurice C. (Associate)
Traffic Engineering Associate
Department of Traffic
City of Los Angeles
SEND MAIL: 4720 Crown Avenue
La Canada, California

OVERMYER, Richard A. (Associate)
Traffic Engineer III
Department of Streets
SEND MAIL: 6829 Crittenden Street
Philadelphia 19, Pennsylvania

STEWART, A. Lynn (Member)
City Traffic Engineer
New City Hall
Fresno, California

SYREK, Daniel B. (Associate)
Civil Engineering Assistant
Statistics and Research Group
County Road Dept.
SEND MAIL: 2424½ Loma Vista Place
Los Angeles 39, California

THOMAS, William L. (Associate)
Assistant Traffic Engineer
Traffic Engineering Dept.
311 City Hall
Atlanta, Georgia

TITUS, Robert E. (Associate)
Senior Engineer
State Road Commission
1800 Washington Street, E.
Charleston, West Virginia

NEW MEMBERS

ALLINSON, Wayne C. (Junior)
Supervising Highway Research Engineer
Dept. of Public Works
SEND MAIL: 100 Miller Avenue
Rumford 16, Rhode Island

ANDERSON, James H. (Associate)
District Traffic Engineer
Division of Highways
Highway Building
430 W. Wabash Avenue
Eureka, California

BAKER, Richard L. (Junior)
Assistant Highway Engineer
Division of Highways
SEND MAIL: 549 So. Laverne Avenue
Los Angeles 22, California

BARR, John W. (Junior)
Traffic Engineer
Traffic & Planning Division
State Road Department
Tallahassee, Florida

BECK, Edwin L. (Junior)
Assistant Traffic Engineer
Traffic Engineering Department
City Hall
Tulsa, Oklahoma

CARSON, William L. (Junior)
Acting Manager
Traffic Engineering Dept.
American Automobile Association
SEND MAIL: 2707 Adams Mill Road, N. W.
Washington, D. C.

CATHER, Donald W. (Associate)
Staff Engineer
De Leuw, Cather & Company
150 N. Wacker Drive
Chicago 6, Illinois

CHALLIS, James W. (Associate)
Assistant Engineer 1, Civil
Division of Traffic Engineering
Bureau of Engineering
Department of Public Works
San Francisco, California

COTTAM, Roy W. (Junior)
Assistant Electrical Engineer of Highway Traffic
Dept. of Traffic
SEND MAIL: 472 10th Street
Brooklyn 15, New York

DABEL, William J. (Junior)
Traffic Engineer
City Hall
P. O. Box 660
Napa, California

DAVIS, Harmer E. (Affiliate)
Director
Institute of Transportation & Traffic Engineering
University of California
Berkeley 4, California

DEC, Theodore (Associate)
District Planning Engineer
U. S. Department of Commerce
Bureau of Public Roads
408 State Highway Building
Salem, Oregon

DOUGHTY, James R. (Junior)
Traffic Commissioner
Room 301 City Building
Hamilton, Ohio

EDENS, Hendrik J. (Junior)
Traffic Engineer
Town Planning Consultants, Ltd.
SEND MAIL: 58 Ridgevale Drive
Toronto (W. H.), Ontario, Canada

EDWARDS, Herbert M. (Junior)
Assistant Professor of Civil Engineering
Queen's University
Kingston, Ontario, Canada

GRANN, Henry R. (Associate)
Traffic Engineer
Highway Department
8600 East US 67 Expressway
P. O. Box 3067
Dallas, Texas

HARRISON, Billy J. (Junior)
Engineer I
Traffic Engineering Department
SEND MAIL: 3254 Olive Place
Forth Worth, Texas

HAWKINS, Harvey E. (Junior)
Engineer of Surveys and Plans
Department of Traffic & Transportation
Room 702, City Hall
Houston, Texas

HOFFMAN, Robert N. (Associate)
Director, Traffic Engineering and Accident Prevention
Automobile Club of Philadelphia
23 South 23rd Street
Philadelphia 3, Pennsylvania

HOLADAY, Robert E. (Associate)
Executive Assistant to Traffic Engineer
State Highway Department
Columbus
SEND MAIL: 617 Morning Street
Worthington, Ohio

HOLE, Frederick R. (Associate)
Assistant Director of Traffic Engineering Department
City Hall
Vancouver 10, B. C.

HOLLOWAY, Frank M. (Junior)
Research Engineer
Joint Highway Research Project
Purdue University
Lafayette, Indiana

HOMBURGER, Wolfgang S. (Junior)
Junior Research Engineer
Institute of Transportation & Traffic Engineering
University of California
SEND MAIL: 922 Hillgale Avenue
Berkeley 8, California

HOUSE, Thomas D., Sr. (Member)
Highway Planning Engineer
State Highway Department
2 Capitol Square
Atlanta 3, Georgia

HUBBARD, Robert A. (Junior)
Highway Engineer Trainee
Department of Highways
Traffic and Planning Division
Richmond
SEND MAIL: 501 Beech Street
Farmville, Virginia

JACKSON (Miss) Elizabeth A. (Junior)
Associate Planner
Planning Commission
SEND MAIL: 428 St. James Place
Chicago, Illinois (Apt. 502)

KEEFER Louis E. (Junior)
Assistant Engineer of Planning
Traffic & Planning Division
State Road Department
1503 Fernando Drive
Tallahassee, Florida

KENNEDY, John A. (Associate)
Traffic and Safety Director
State Highway Department
P. O. Box 1641
Santa Fe, New Mexico

KERMIT, Mark L. (Associate)
Assistant Engineer I
Bureau of Engineering
SEND MAIL: 68 Melrose Avenue
San Francisco 12, California

LEWIS, Ralph G., Jr. (Junior)
Assistant Traffic Engineer
Traffic Engineering Department
113 City Hall
Chattanooga, Tennessee

MARLOW, Joseph S. (Junior)
c/o The Director, U.S.O.M.
Saigon, Viet Nam
c/o The State Dept. Mail Room
Washington 25, D. C.

MARTIN, Paul G. (Member)
Partner (& Owner)
Burgwin and Martin, Consulting Engineers
406 West 7th Street
Topeka, Kansas

MARTINEK, James F. (Junior)
Director of Public Works
City Hall
Riverside, California

MATTSON, Joe O. (Affiliate)
President
Automotive Safety Foundation
200 Ring Building
Washington 6, D. C.

MELE, Charles N. (Junior)
Traffic Engineer II
Bureau of Street Traffic & Parking
Room 709, City Hall
Chicago, Illinois

MISCIMARRA, Anthony F. (Associate)
Traffic Planner
908 City-County Building
Pittsburgh 19, Pennsylvania

MOORE, Loran S. (Associate)
District Traffic Engineer
Division of Highways
San Bernardino
SEND MAIL: 224 E. Valencia Avenue
Rialto, California

All easterners should start planning now to attend the ITE Meeting in San Francisco in September. Picture shows a group of Westerners doing some advance planning for the San Francisco event when they got together in San Diego at the Western Section Annual Meeting last June. (Standing left to right) Roy Sawhill, Bob Evenson, Merry Sawhill, Jack Henberger, Helen Henberger, Pat DeYoung, Pete Rask, Al Pepper, Stan Penton, Gran Parmelee, and Guy McDonald. (Kneeling left to right) Bill Sheffield, Tim Todd (he's a Westerner?) and Herbert Higgins.

NIELSEN, Mogens Thor M. (Junior)
Traffic Engineer, Grade II
Traffic Engineering Division
72 Queen Street, West
Toronto, Ontario, Canada

NOERR, Karl (Junior)
Engineer Trainee
Department of Highways, Richmond
SEND MAIL: 323 West Asher Street
Culpeper, Virginia

QUINN, Jay W. (Associate)
Assistant Traffic Engineer
SEND MAIL: 455 Ardmore Road
Charlotte, North Carolina

SHUFFLEBARGER, Curtis L., Jr. (Junior)
Civil Engineer I
County Highway Division
Arlington
SEND MAIL: 3407 Commonwealth Avenue
Alexandria, Virginia

SMITH, Edward L. (Junior)
Senior Traffic Engineer
National Safety Council
425 North Michigan Avenue
Chicago 11, Illinois

SPEER, Richard C. (Junior)
Engineer II (Traffic)
Bureau of Traffic Engineering
526 S. W. Mill Street
Portland, Oregon

STEWART, General George C. (Affiliate)
General Manager
National Safety Council
425 North Michigan Avenue
Chicago, Illinois

STEWART, William A. (Junior)
Chief Engineer
Municipal Department
A. D. Margison & Associates Ltd.
30 Eglinton Avenue E.
Toronto, Ontario, Canada

TSIKNAS, John C. (Junior)
Junior Civil Engineer (Traffic)
Engineering Department
268 Civic Center
San Diego 1, California

VIVONI, William, Jr. (Associate)
Chief, Traffic Safety Division
Department of Public Works
SEND MAIL: P. O. Box 3905
San Juan 19, Puerto Rico

WICKSTROM, George V. (Junior)
Assistant Civil Engineer
Department of Traffic
SEND MAIL: Yale Bureau of Highway Traffic
311 Strathcona Hall
New Haven, Connecticut

WITHEFORD, David K. (Junior)
Assistant Traffic Engineer
Traffic & Planning Division
State Highway Department
Dover, Delaware

Texas Section Will Meet

The Texas Section, ITE, is planning big doings when it holds its next semi-annual meeting January 27 and 28, 1956, at San Antonio's Gunter Hotel. San Antonio is in southern Texas—about 150 miles northeast of the Mexican border and an equal distance northwest of the Gulf Coast. The Chamber of Commerce claims that the city is where "The Sun Spends the Winter" but the Local Section Committee is playing it safe in their meeting announcements. These say that sometimes the clouds take over, and it's possible for a norther to reach that far south, and wind up with the suggestion that it might not be unwise to bring an overcoat.

The meeting will get underway at 2:00 P.M., Friday with a Business and Technical Session; also a party for the girls who come along to chaperone their husbands. Friday evening buses will transport the registrants to what is advertised as "Dinner, ETC" in the Corral Room of the Pearl Brewery. It's rumored that there may be some food for those whose digestive systems balk at ETC by itself, and good music with ample space for dancing is assured.

A Technical Session Saturday morning, followed by a Mexican luncheon and a sightseeing tour by bus during the afternoon will wind up the festivities. The luncheon at a popular Mexican restaurant is designed to leave with the visiting brethren and sisters a lasting taste of San Antonio.

The host Committee consists of Stewart Fischer, Carl Braunig and Joe Wright.

...because they went to their doctors in time

Many thousands of Americans are being cured of cancer every year. More and more people are going to their doctors *in time*. That is encouraging!

But the tragic fact, our doctors tell us, is that every third cancer death is a needless death...*twice* as many could be saved.

To learn how to head off cancer, call the American Cancer Society office nearest you or simply write to "Cancer" in care of your local Post Office.

American Cancer Society

Summary of IRF Meeting in Rome

Over 1000 persons from 55 countries of the world attended the Second World Meeting of International Road Federation which was held October 26 in Rome. This meeting was the largest international gathering ever held on the subject of highways.

His Holiness Pope Pius XII gave an audience to the delegates of the meeting and presented a 15-minute talk covering many of the problems in the use and development of roads. The theme of his talk was the practice of the Golden Rule by highway planners and developers as well as by motorists and pedestrians.

Thirty-five resolutions were passed at the second IRF world meeting which included the need for attracting more engineers to the highway and traffic field; the offering of additional courses in highway and traffic engineering in colleges; and the need for short courses in traffic engineering to be offered on a regional basis through the cooperation of industry and private organization.

General Anderson, Virginia Commissioner of Highways and Congressman George Fallon, Chairman of the U. S. Congressional Sub-Committee on Roads, participated on the technical program. Francis Dupont, special assistant to the U. S. Secretary of Commerce; Blifford Davis, George A. Dondero, Samuel Friedel, Thaddeus Makhrowicz, Herbert B. Scudder, Russell Mack, and Frank E. Smith, all members of the U. S. Congress; Kuy Kelcey, Emmett Karrer, Russell Singer, R. O. Swain, Paul Rinehold and Francis E. Twiss were some of those from the United States who attended the Rome meeting.

Short Course to be Held at UCLA

A two-week course directly preceding the 1956 Annual Meeting of the Institute of Traffic Engineers is to be held at the University of California at Los Angeles from September 10 to 31, 1956, on the subject "Simulation and Theory of Traffic Flow."

The instructional staff will be composed of visiting specialists as well as selected members of the faculty of the University of California. The instruction will include lectures, seminars, laboratory work, and outside assignments.

The fee for the two-week course will be $100 which will include all course material.

For further information, write to:

Institute of Transportation and Traffic Engineering
University of California
Los Angeles 24, California

Indiana's Toll Road To Have De-Icers

Indiana's new East-West toll highway will have a novel safety feature when it is opened for traffic next summer. According to the Indiana toll road commission no other toll highway has deicing equipment built into the roadways at the toll plazas where motorists will pay their fee as they leave the road.

Working similarly to an ice rink in reverse, the de-icing process will be possible by placing heat circulating pipes in the concrete pavement. The stopping of vehicles at toll plazas has often proven hazardous on other toll roads in Northern climates.

SECTION NEWS

MICHIGAN SECTION

On Wednesday, October 12, 1955, the Michigan Section of ITE held an unique meeting at Dearborn Inn, Dearborn, Michigan, sponsored by Socony Mobil Oil Company and guided by Mr. **Walt Splane.**

Those ITE members vitally interested in the subject matter were invited to attend a luncheon and afternoon meeting and were later joined by other members for cocktails, dinner, business and an oil industry movie. About 80 persons participated in the evening meeting.

The purpose of the meeting was to tell the oil industry's concern about restricted access to their retail outlets. The success of endeavors in Ohio to arrive at a solution of this problem acceptable to Ohio State Highway Officials and the oil industry was attested to by Sohio Officials who brought some Ohio highway and safety officials along. Standard Oil of Indiana was also represented.

At the unofficial afternoon meeting the oil people presented some revealing slides and figures which were the result of studies made at about fourteen gasoline service stations in Michigan and Ohio. These charts showed ingress and egress patterns under varying roadway and traffic conditions. From these surveys it was no secret that the oil companies are unhappy about having ingress or egress to their stations cut off in any manner. A general discussion of the problem which brought out a lot of abuses by station operators followed the showing and discussion of the slides. Major oil companies are constantly striving to keep their operators in line but find it difficult if competing stations get or have "special" ingress and egress advantages. It was suggested that a resolution be drawn up to set up an ITE committee to work with the oil industry in connection with ingress and egress problems.

Following dinner a business meeting was held presided over by President **Ed Gervais.** The resolution referred to above was read and unanimously approved by the members. A rising vote of thanks was given to Socony Mobil and it was suggested that meetings like this be made an annual affair. **Carl McMonagle** pointed out the need for action to steer the ITE National Convention to Detroit for 1957. The Board has approved District 3 and Detroit is the logical city in this district. President **Gervais** referred to the recent Toledo meeting as pointing up the need for educational facilities for traffic engineering training in universities. It was suggested that the National ITE group should study pedestrian signals in regard to types, legend and uniformity. Meeting adjourned at 8:27 p.m.

Sam Levine, Program Chairman who arranged this meeting, introduced Mr. **F. R. McLean,** Safety Director, Socony Mobil Oil Company, who pointed out the good safety record of the oil industry and decried the publicity connected with so-called oil industry "disasters." To show why the oil industry has such a good safety record a Dupont produced film "Pipe Line on Wheels" was shown. This film debunked the misbelief that tank trucks are a menace on highways and showed why tanker fires are rare as a result of accidents to vehicles hauling petroleum products. The things done to the tank trailer loaded with gasoline were amazing — yet the results proved how safe a modern tanker really is.

Allen T. Hayes
Associate Editor

MIDWEST SECTION

Taken from Midwest Newsletter, Richard A. Walons, Editor.

ITE Entranced

Manufacturer's Nite this year had a big reputation to live up to, and it came through with flying colors. On Thursday, September 15th, Midwest Section ITEs flocked to the Chicago Engineers Club, not knowing exactly what to ex-

pect, but looking forward to a good time. They weren't at all disappointed.

The evening began with refreshments provided by the manufacturers, and continued with dinner, made entertaining by the addition of dinner music from an all female instrumental duet. The evening's highlight, however, was yet to come.

As the last dish was being cleared off the table, **Doug Bell** presented the program for the evening. He introduced a harmless looking young lady, and the membership shuddered a little as she claimed hypnosis as a profession.

A call for volunteers was fruitless so several were selected to aid in the program. With a quiet but firm and commanding voice relaxing and captivating them, two of the "volunteers," **Ted Siegel** and **Harry Gustis**, fell prey to hypnosis. Once under the spell, each performed various roles, as those of singers, dancers, boxers, and TV stars. They tried, but couldn't manage, to lower their arms from a raised position when told their arms were rigid, then couldn't lift a chair when told it weighed 1000 pounds. Post hypnotic suggestion was also demonstrated as the two repeated a phrase after they were "awake" at the mention of a key word.

It was a remarkable demonstration and one which will not be forgotten for a long time by those in attendance. What will these manufacturers conjure up next year?

Chatter

The downfall of bachelorhood has begun—**James Madison Hunnicutt** has done got himself engaged. He claims the wedding won't be for a while yet, but inside sources say it could happen before the end of the year for income tax purposes.

Civilian defense school enlightened **Charlie McLean**, but there still isn't a citizen around who will let Charlie defend him.

The quiet visit of **Henry Wantoch** to Chicago leads to the speculation that he may be trying to pawn off some practically new controllers for all-red pedestrian intervals on someone.

Hope dreams aren't ominous. **Mike Hartigan** dreamed that all of the city's young TE's were either drafted, fired, quit, or died.

Dick Fencl secured walkie-talkies for the crews conducting the latest sign tests, but they were evidently tuned to a Chinese station. Result: Word was carried Paul Revere style.

MISSOURI VALLEY SECTION

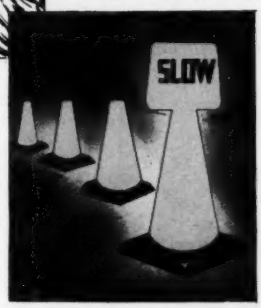
Jack A. Hutter, Director of the Traffic Department of Kansas City, is the proud father of a new daughter. The name is Lucinda, and it is your reporter's impression that Hutter is ready and willing to pass out cigars.

SAFE-T-CONE®

ALL-RUBBER TRAFFIC GUIDES

For Fast-Efficient

TRAFFIC CONTROL



DAY-TIME OR NIGHT-TIME

Painted or reflectorized, Safe-T-Cones offer maximum visibility.

Safe-T-Cones are available with adaptor signs, with any lettering desired.

Patent Pending

Wherever traffic control becomes difficult . . . during rush hours, street repair or emergency, these big, "steel-like" rubber traffic cones demand motorists respect. Available in two sizes, 18 inch and 28 inch, painted or reflectorized.

Write for complete information today!

RADIATOR SPECIALTY CO.
CHARLOTTE, NORTH CAROLINA

2010

Burt Whedon, Director of the Department of Street Transportation for Omaha, has a new assistant, **Joe M. Burleson**, who is a member of I.T.E. and a new member of Missouri Valley Section.

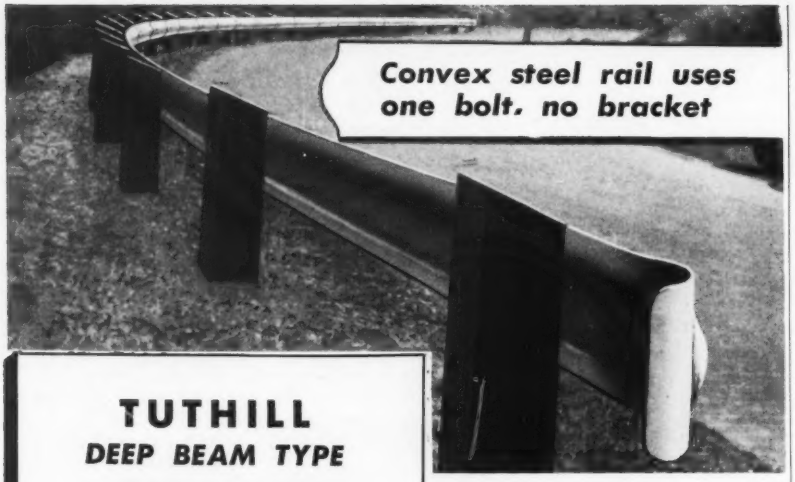
Burt advises that **Jack Darnell** of Wilbur Smith and Associates is now making an O. and D. Survey in Omaha as a part of comprehensive Metropolitan Area Survey.

A. J. "Tony" Basile reports that the Kansas State Highway Traffic Control Department has taken on two new members, **Floyd I. Jones** and **Bill Krietmeyer**. **Jones** has transferred to that department from the Division of Planning, and Krietmeyer from the Division of Design.

Speakers Section

W. W. "Woody" Rankin, Traffic Engineer for the City of Wichita, spoke before the Kansas Governor's Highway Safety Conference on October 10.

"**Woody**" will be missed by the Section membership when he leaves to take on his new job in Canada. The probabilities are that **George Fisher** will have to go to work now that his trusty right hand is departing. "**Woody**" will be Di-



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DEEP BEAM TYPE
GUARD RAIL
cushions shock . . .
deflects cars safely

TUTHILL deep beam construction transmits impact to guard post, deflects and protects vehicle and occupants. Convex rail, secured to post with a single bolt, meets "deep beam" specifications . . . costs less to install, cuts maintenance. TUTHILL'S convex curve also gives highest visibility in darkness, rain or fog.

TUTHILL SPRING CO.

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WRITE TODAY for complete brochure

rector of Traffic and Transportation for the City of Ottawa, Canada. An assist from the Missouri Valley Section to the Canadian Section.

Leon Corder, Traffic Engineer for the Missouri Highway Department, appeared on the program of the Missouri Municipal League annual meeting at Springfield, Missouri on October 19.

Coming and Going

Henry M. DeNoble is the new Director of Planning and Traffic for the City of Springfield, Missouri. **Henry** is a member of I.T.E. and a new member of Missouri Valley Section.

The Missouri State Highway Department lost an old time Traffic Engineer on October 1, when **Harry D. Griffith** retired. **Griffith** who had engaged in traffic and safety work for many years, had passed the age of 70 and retired under the new Missouri State Highway Retirement Plan. The Section loses an Affiliate Member, but **Harry's** many friends in the Traffic Engineering field wish for him many more years of pleasant activity.

The Section held a meeting during the Annual I.T.E. Convention at Pittsburgh. It was decided to hold the annual section meeting in St. Louis in April or May. **Thomas E. Bolner,** Senior Engineer in the Missouri State Highway Department Traffic Control Section, was elected a section affiliate. **A. J. "Tony" Basile** was appointed by President **J. J. Feuchter** to the office of Section Secretary-Treasurer, to fill the vacancy left by **"Woody" Rankin's** departure.

The Missouri Valley Section now has a membership of 35 members and 8 Section affiliates, and excellent prospects for a substantial increase in 1956. The fastest growing section in the world!

Leon W. Corder
Associate Editor

METROPOLITAN SECTION

Clipped from Metropolitan Section Newsletter, Richard I. Strickland, Chairman.

Buffalo Downtown Parking Improvement

Within the last month the Buffalo Municipal Parking Authority has placed two of its three downtown parking garages in operation. These are self-parking garages of the continuous ramp type which are designed to take advantage of the natural slope of the ground at the sites. They have capacities of from 300 to 500 or more cars each. A third garage will be opened soon, and a fourth is under construction at the Broadway Market in a secondary shopping district. These garages were built by an authority and leased to private operators. When paid for, they are to revert to the City.

The parking fee is 35 cents for the first two hours and 15 cents for each additional hour, up to a maximum of a dollar for the entire day.

Since this extra parking space has been made available the City has rearranged its downtown traffic pattern, removing meters and prohibiting parking on several downtown streets; at the same time restoring two-way traffic on these arteries which had been one-way for several years.

New Jersey Traffic Training Program

Two section Members, **Herb Klar** and **John Crosby,** will serve as instructors in a 2-year training program, "Street and Highway Planning and Control." The program is jointly sponsored by the Extension Division of Rutgers University and the Department of Law and Public Safety, Bureau of Traffic Safety. The program is designed to give practical instruction in traffic planning and control for municipal and county personnel in the state of New Jersey. Courses in public relations and public speaking are included as well as "Traffic Regulation" and "Traffic Engineering Principles" which are taught by **Herb** and **John.**

Link Nyack Thruway Span

The connecting link on the New York State Thruway Hudson River crossing between South Nyack and Tarrytown was installed September 29th. The 60-foot girder joined 11,370 feet of construction from the Nyack, or west, side of the river with 4,270 feet of construction from the east Tarrytown side to complete the 15,700-foot span.

Concrete work on the 2,400-foot roadway between the causeways at either end of the bridge will begin immediately. The span is expected to be opened during the first or second week in November if weather conditions do not impede the work.

Distinguished Markings For New York State Police Cars

New replacements for New York State Police cars are now appearing in a dazzling black and white combination with siren and lettering conspicuously displayed. Quite a change from the unassuming dark grey vehicle of past years.

Report of New Jersey Turnpike Extension and Widening Program

Good progress has been announced on the three current projects of the New Jersey Turnpike Authority. Substantial lengths of the new 3rd lane

between Interchange 4 (Camden-Philadelphia) and 11 ((Woodbridge-Amboys) have been completed and it is expected that the full length of 57 miles will be completed, providing a 6 lane divided highway between Philadelphia and the Lincoln Tunnel by early December of this year. Grading for the widening between the Lincoln Tunnel and the George Washington Bridge is nearly completed but paving will not be done until 1956. Cost of the total project including two new service areas and improvement of service facilities and interchanges will approximate 34 million dollars.

The southern end of the 118 million dollar Newark Bay Hudson County Extension Project is rapidly approaching completion. Paving of the bridge spanning Newark Bay is well underway. If current progress continues the opening date of the section connecting Newark Airport area with the Holland Tunnel will probably be soon after January 1, 1956 with the entire project scheduled for completion in early spring of 1956.

Work on the Pennsylvania Extension and the new bridge crossing the Delaware to connect with the existing eastern extension of the Pennsylvania Turnpike has been speeded up. Current schedules of this 27 million dollar project call for completion in early 1956.

TEXAS SECTION

Snipped from Tex-ITE, Jim Saylor, Secretary—Treasurer.

M M & M Shines

Texas representatives to the "Scotchlite" sign clinic on September 13-16 were **George Cogger** from Dallas and **T. R. Buckman** from Fort Worth who were flown to Oklahoma City as guests of **Andy Andriacchi.** There the three were joined by a party from the Oklahoma Highway Department and all were transported to St. Paul in a private 3-M plane, a plush DC-3 complete with sofas, card table, and a well-stocked bar.

Don Opstad of 3-M had planned a most interesting and instructive tour of the Chemolite Plant and the new Central Research Building. Thursday afternoon the group departed for a fishing expedition on Lake Mille Lac. Andy proved to be the only fisherman in the Texas delegation, but he was not the only Texan to be marked for distinction. We understand that the weather was a little rough on the lake which influenced **"Buck" to give his all.**

The 3-M plane was boarded on Friday for the return trip and after numerous hands of "Michigan Buck - Up" (an **Andriacchi** special card game), all were deposited safely at their destinations.

Para El Cuidad De Mexico

George Jamison reports that the Crouse-Hinds Company has recently shipped the first carload of traffic signals to his job in Mexico City. At least two more carloads are scheduled to arrive before the end of the year. Mexico City is spending 8,000,000 pesos ($640,000) on traffic signal installations, making this the largest single contract ever let at one time for signal installation on the North American Continent. Looks like the old familiar tourist sight of the policeman with the red lantern will finally give way to progress of modern traffic control.

Recommendations Adopted

Chuck Clinard has been in Abilene just seven months and is convinced that there are few places which offer better opportunities. Chuck is making quite a reputation for himself, as evidenced by the ready cooperation he is receiving from the City Commission, the Chamber of Commerce, and the public in general. These organizations have been quick to recognize and to act on the traffic problems. The following is an excerpt from the September 23rd Abilene paper:

"Abilene will have some one-way streets. The City Commission Friday morning took note of the heavy increase in traffic and ordered that

HERE'S THE SOLUTION
FOR TRICKY TRAFFIC TROUBLES
EMBOSSED SIGNS BY MIRO-FLEX
YIELD
RIGHT OF WAY
Students who study traffic look to Miro-Flex for the sign that handles those ticklish traffic problems as well as for signs that control the normal traffic flow. Not only do they rely on the experience that Miro-Flex has of working with traffic engineers, but they know that all Miro-Flex signs are made for legibility, strength, and durability. That is why Miro-Flex signs are embossed. Write for your catalog today.. or let the Miro-Flex Company know your special traffic problem.
WRITE TO
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ROAD TO REDUCED STRIPING COSTS

Get These Benefits with CATALINE *Reflective* Pavement Marking

- 50% longer life than ordinary traffic paints
- "No-track" in six minutes —dry in 20 minutes
- Meets all specifications
- Easy application with standard striping equipment
- Premixed or Drop-on, as you prefer
- Weather and wear resistant
- Brilliant reflection by night —bright marking by day
- Reflectorizing beads made of high grade optical crown glass

Write today for catalogs— TP-1 (Drop-on) and TP-2 (Premixed)

Toledo 10, Ohio and Jackson, Miss.

Serving Traffic Needs With
TRAFFIC AND STREET SIGNS
CATAFLEX SIGN KITS
CATALINE REFLECTIVE PAVEMENT MARKING
PAVEMENT MARKING BEADS

four streets be made one-way for a 90-day trial period beginning Oct. 15.

Its action followed a recommendation from City Traffic Engineer **Chas. A. Clinard** and from the Traffic Safety Committee of the Abilene Chamber of Commerce. The latter panel didn't suggest which streets to select, but **Clinard** did. The following are the streets to be one-way between Grape and Walnut Sts: 1. N. 6th west-bound only; 2. N. 5th, east-bound; 3. N. 4th, west-bound; 4. N. 3rd, east-bound.

The commission went along with **Clinard's** request that head-in parking between the curb lines be prohibited on Pine St. from N. 5th to N. 13th St.

Legett Dr. was designated, at **Clinard's** suggestion, as a through street from S. 1st to S. 14th St., to be protected by "Yield" signs."

Chuck is also in the process of installing a new signal system at fifteen downtown intersections, and has authorization to install signals at several isolated locations as soon as some details can be worked out.

On Capitol Hill

Walt Klapproth reports that Congress Avenue, the 94 foot "main stem" of Texas, is being dressed up with a resurfacing from the banks of the Colorado to Capitol Hill. Pedestrians caused the greatest headache until roped off completely from the work area. It is reported that the floors and carpeting in numerous stores along the upper end of the "Avenue" were well tack-coated during the first few hours of resurfacing operations. It is anticipated that their headaches will continue for several weeks after the resurfacing is completed in marking the street, widening parking spaces and relocating parking meters.

Heavy traffic to and from simultaneous events at the baseball park, various soft-ball diamonds, two Kiddie-land parks and at a city park, all located in the immediate vicinity of Barton Springs Road and South Lamar Blvd., have failed to "stump" three-phase vehicle-actuated traffic density control installed at the intersection during the past summer.

Within the next few months Austin is due for a fair sample of specialized traffic control "gadgets" that have been developed in the vehicle-actuated field including railroad pre-emption, dual left turn control and radar detectors. In addition, the department will soon have available an Esterline-Angus Speed-Delay Meter for use in connection with future studies of traffic flow and facilitation.

Walt will attend the Annual Meeting in Pittsburgh and will participate in the Work-Conference to be attended by present and former officers and directors of ITE on Friday, Saturday, and possibly Sunday preceding the Annual Meeting.

Will Rogers Once Said . . .

the two most unusual cities in the United States are San Antonio and New Orleans. Old San Antone is to undergo a metamorphosis which may tend to subtract from this distinction. Stew **Fischer** is about to replace all the old signal heads in the city. Those who have seen these red and green spectaculars with the amber binnacle light will long remember them with a feeling of nostalgia.

Things have been happening fast in San Antonio the past few months. In addition to developing a new signal system for the downtown area which will have 25 "scrambles," negotiations are underway with the Highway Department to make an O. & D. Survey, and we understand **Joe Wright** is already looking for a residence. With the aid of an additional striping machine the pavement marking program has been increased from 50 miles to a total of 175 miles.

A Propensity for Travel

is being displayed by several of the fellows in the Texas Highway Department. **Paul Tutt** is in Atlanta (Texas, that is) to join the District Engineer in a conference with city officials of Marshall on the design features of the intersection of U. S. Highways 59 and 80 in Marshall. While in Atlanta, **Paul** will discuss with District personnel the coding system, method of analyses, and uses of accident record data furnished to the Districts by the Austin Office.

Dale Marvel, District Traffic Engineer for the Highway Department at Houston, was in the Austin Office recently for discussion of various phases of work in District 12.

Bill Stebbins has been traveling again. The last two weeks in August he spent in the Canadian Rockies and the Seattle-Tacoma area on an extensive trip with his parents and grandmother, which included travel by air, rail, bus, auto, and steamship. The weekend of September 10-11 he was in Dallas for the convention of the Lone Star Region of the National Model Railroad Association where he won a third prize in the competition for complete model freight trains. The week of September 12 he spent in the San Angelo and Pecos Highway District Offices explaining the use of the Accident Spot Maps and Accident Record Tabulations prepared by the Traffic Engineering Section.

WESTERN SECTION

Intermountain Area

From correspondence intercepted by the Secretary-Treasurer, **V. P. Al Pepper** has been terrifically busy moving to new headquarters. **Jack Bruce** swamped in traffic business in Denver and **Bob O'Connell** swamped with preparation for WASHO convention in Wyoming the early part of September.

Sacramento Area

The Sacramento Area had a very successful Bar-B-Que in **Karl Moskowitz's** back yard on Saturday night, August 27th. Fifteen traffic engineers and their wives from the Sacramento Area were in attendance. This was the first purely social function that the Sacramento Area has attempted and everyone was much pleased with its success.

San Diego Area

Ed Hall announces a new addition to his City Transportation Research Staff. The new arrival is **Stephen George, Jr.,** who hails from Ontario, California, and is a recent graduate of the Yale Bureau of Highway Traffic, with four years with the State Division of Highways under his belt.

San Diego announces a further step toward eventual complete change-over to one-way operation in the Central Business District. "A" Street and Ash Street went to one-way operation on September 1st. Thanks to a great deal of favorable advance publicity, which was bolstered by television appearances by **Marty Bouman, John Tsiknas** and **Jim Reading,** the new couplet is functioning smoothly.

Los Angeles Area

Gran Parmelee has again been elected Los Angeles Area Chairman. His family was with him on a four week tour of Nevada, Idaho, Montana, Oregon, Washington, British Columbia and Alberta. He was scouting new signs, and enjoying new highways such as the Freeway through Vancouver, Washington.

Oregon Area

Lee Kies has left Oregon for greener pastures in California, namely Sacramento, where he will be on **Jack Faustman's** staff. **Lee** will be sorely missed in Oregon, where he did an outstanding job as Traffic Engineer for the City of Eugene. All of his many friends in Oregon wish him much success in his new job. Good luck **Lee.**

Bob Blensly and **"Swueeg" Glaze,** Planning Engineers for Oregon and Washington, will both be testifying at an Interestate Commerce Commission hearing on freight rates to be held in Seattle on September 19th.

Bud George, Traffic Signal Engineer, and **Bill Widdows,** Assistant Maintenance Engineer, installed a 16-inch red neon signal head at an intersection in Gladstone on U.S. 99 to see if the oversized head reduced rear-end collisions. The intersection had been the scene of approximately 30 total accidents per year for the past three years. It's still too early to tell, but if the big head does as well as it appears to be doing, Oregon will probably install some form of oversize stop indications at problem intersections.

The report on the Portland Metropolitan Area Freeway and Expressway System "Oregon State Highway Department Technical Report No. 55-5," has been published, and the immediate reaction has been very favorable. The report recommends 96 miles of freeways, and 74 miles of expressways, at a cost of $275,000,000 and $53,000,000 respectively. Major streets necessary to tie the network together will bring the total to $371,000,000. The report, which contains 150 pages, uses transparent overlays and a great deal of color to illustrate the proposals. Preliminary plans for the 14 proposed freeways are included.

The T. H. Banfield Freeway from Troutdale to NE 42nd Avenue is scheduled for opening October 1st. This freeway is an extension of the U. S. 30 water grade highway, and will eventually extend to downtown Portland. Present plans put the opening date for the last section at 1958.

Don Bergstrom reports that during the Rose Festival, the City of Portland painted a crosswalk across Harbor Drive (ADT 40,000) so people could get to the warships tied along the harbor wall. They used whitewash because of the temporary nature of the thing, and a few days after the crosswalk was worn off, a letter from a lady driver came in commending the city for recognizing the need for a crosswalk at that location and condemning them for their selection of paint. She referred them to Hazel Bishop (cosmetics) where she said she gets her longer-lasting paints.

Washington Area

A successful dinner meeting was held September 6th at the Top-of-the-Ocean in Tacoma during which new Co-Chairmen **Mitchell** and **Clees** were elected. Plans were formulated for an interesting series of technical and social gatherings of Washington WITE's for the forthcoming year.

Roving Reporter

Dick Gallagher reported to be getting his San Diego Public Works Department well in hand. **Lamar Gardner** is enjoying his new job as Traffic Engineer in Los Angeles Traffic Department. **Dr. Dan Gerlough** expects to have engraved cards printed with his new title.

Al Head has been attending and planning meetings of engineers in surrounding states. **Geo. Houghtailing** reported to have returned safely to Honolulu after a recent stateside visit. **Lucky Luckenbach** admirably handled arrangements for Mr. Wallace's retirement party—nearly 600 friends at El Cortez dinner. **Ellis Mathes** has completed two weeks annual duty with Air Corps reserve and is back on job.

Clayton Paige has had wonderful success with exhibit in Burbank which gave citizens fine idea of materials used by Public Works Department of a growing city. **Deane Terry** is working hard on the proposed system of radio interconnected signals near the International Airport in Los Angeles.

Jake Young is now an expert hydraulic engineer having given a speech in front of the American Society of Civil Engineers in San Francisco on Subterranean Flows.

Robert E. Dunn
Associate Editor

MEMBERSHIP APPLICATIONS

(Continued from page 124)

McANDREW, Edward G.
County Traffic Engineer & Chief, Safety Engineering Section
Los Alamos Field Office, USAEC
Los Alamos, New Mexico
October 7, 1955 for MEMBER grade

McLEAN, Charles H.
Traffic Engineer I
Bureau of Street Traffic & Parking
Room 709, City Hall
Chicago, Illinois
October 3, 1955 for JUNIOR grade

MURRAY, Harry B.
Traffic Engineer II
1002 City Hall Annex
Philadelphia, Pennsylvania
October 6, 1955 for ASSOCIATE grade

RAMOS, Irineo S.
Traffic Research Engineer
Bureau of Public Highways
Manila, Philippines
October 4, 1955 for MEMBER grade

REYMAN, George L.
Assistant District Traffic Engineer
Indiana State Highway Department
Box 178
Seymour, Indiana
October 13, 1955 for ASSOCIATE grade

ROBINSON, James H.
Director of Traffic Control
City of Oklahoma City
501 Municipal Building
Oklahoma City, Oklahoma
October 26, 1955 for ASSOCIATE grade

SCOTT, Clyde W.
Assistant City Planner
Cleveland City Planning Commission
501 City Hall
Cleveland 14, Ohio
September 30, 1955 for JUNIOR grade

SHARP, James A.
Traffic Engineer
City of Regina
City Hall
Regina, Saskatchewan, Canada
October 18, 1955 for JUNIOR grade

THOMAS, Richard C.
Assistant Civil Engineer
City of Cleveland
Division of Traffic Engineering & Parking
Room 400, 1404 E. 9th Street
Cleveland, Ohio
September 29, 1955 for JUNIOR grade

Strictly Business

New Sign Making Machine

An easy-to-operate sign-making machine is helping municipalities and counties improve the quality of their traffic signs quickly and economically using their own labor by establishing their own sign maintenance shops.

The machine, called a vacuum applicator, automatically provides a durable bond between "Scotchlite" brand reflective sheeting and metal sign blanks by activating the adhesive on the back of the sheeting. With it, local governments can become self-sufficient in traffic work because they produce top-quality traffic and street name signs—both reflective and non-reflective—as well as refinish old signs.

One reason for its popularity is the relatively small expense involved. Entire sign shops have been set up for less than $1,000—including the cost of the machine and sign materials.

A sign shop requires only a space 20-by-20 feet. Basic equipment is a work table, the vacuum applicator and racks where the finished sign can be placed.

This system also eliminates the need for inventory storage, since the signs can be produced as they are needed, rather than storing several months or a year's supply. Signs can be produced and in place on the street in two or three hours.

Many cities and counties save their sign making for a rainy or winter day. When weather restricts outside work, street or road crew members are assigned to the sign shop and the needed signs produced. Little training is required to produce the signs.

The vacuum applicator is made in two sizes: 5½ feet long, 4 feet wide and 4 feet high for smaller communities; 8½ feet long, 6½ feet wide and 3⅓ feet high for larger communities.

Here's how the vacuum applicator works:

A piece of reflective sheeting is placed on a metal sign blank and both are placed in the applicator. A lid consisting of a rubber "blanket" is lowered to seal off the sign-making compartment.

A vacuum pump draws the air out of the compartment and atmospheric pressure presses the reflective sheeting to the sign blank.

The operator lowers the cover and snaps on a battery of heat lamps inside the cover. In less than five minutes the sign is finished.

The procedure results in an attractive, durable traffic sign, completely reflectorized so it is as visible at night under auto headlights — in color, shape and legend—as it is during the day, and helps in the community's programs for street and highway safety. For more complete information write to Minnesota Mining and Manufacturing Company, 900 Fauquier Street, St. Paul 6, Minnesota.

No-Line Stripe Eradicator

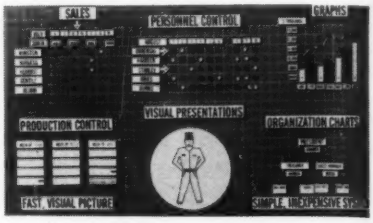
No-Line is a stripe eradicator. It is not a coating to "hide" obsolete traffic stripes. In modern highway traffic planning, changes often make it necessary to remove a paint stripe from the pavement. A paint coating over the obsolete line merely preserves it, and when the coating wears off, the old line reappears, creating confusion and often a dangerous condition. No-Line competely eliminates the stripe from the surface of the highway, without any harm to the pavement.

It can be brushed over the traffic paint which is to be removed. It is then left on the paint for about 10 minutes and then hosed or flushed off with

(Continued on page 136)

New Magne-trol Control Board

Visual control of business operations, with changeable records that are out in the open for all to see and be guided by, is being used today by thousands of plants in scores of industries. It has been thoroughly demonstrated that visual control promotes efficiency and saves money.



Now the new Magne-trol Control Board adds several advantages to visual control. It provides visual records that are more impressive and dramatic. It is so much more flexible that it can be applied to any problem. It provides the easiest and quickest method of changing the visual record.

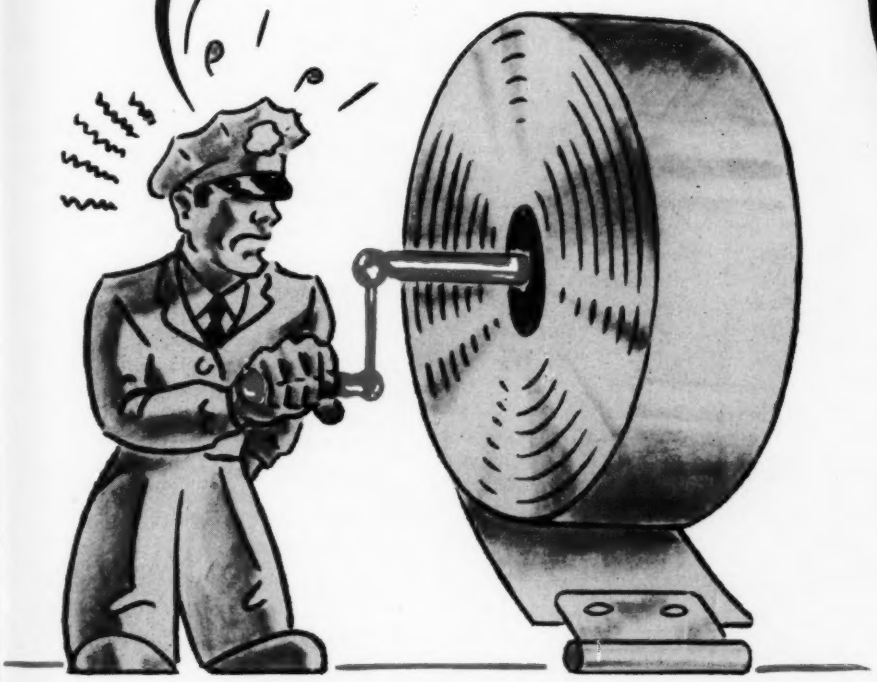
Magne-trol consists of a magnetic steel board which holds firmly on its surface the visual elements that comprise the needs of the user. For the visual elements the manufacturer of Magne-trol provides, according to one's needs, any of the following:

- Alnico permanent magnets of various colors and sizes
- Magnetic card holders for typed, printed or written information
- Larger supporting units for pictorial presentation
- Acetate tape for maps, charts, graphs
- Graph paper
- Colored plastic bars for charts, and graphs
- Circular identification stickers
- Magnetic arrows, straight and curved

All the magnetic elements are made of Alnico magnets and are guaranteed for a lifetime of operation. The user of Magne-trol selects from the above list only these elements that will be best for his purpose.

The standard size of Magne-trol Board measures 24" x 36". But any special size can be built to suit a particular job. Each Board is constructed of magnetic steel bonded to masonite for sturdy support. It is finished in modern

SAVE THAT WINDING EXPENSE!



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"office grey" and attractively framed in polished aluminum. This standard board costs $24.50.

The Magne-trol Board can be used with eminent success for production schedules, sales records and quotas, management control and analysis, graphs and charts, service schedules, inventory control, personnel records, traffic control, warehouse records, organization charts, in and out registers, and a host of other business purposes.

To help the prospective user of Magne-trol see concretely how it can be applied to his need, the manufacturers of Magne-trol are offering a novel "Trial Kit" which is basically a Magne-trol Board in miniature. It is accompanied by all of the visual magnetic elements that are made available. By spending a few minutes moving the magnets around, an executive can learn the benefits to him before deciding to purchase the regulation size Magne-trol Board and the magnetic elements that he will need.

The "Trial Kit" is offered on a "Risk Nothing" basis. The manufacturer offers it at a nominal $4.95 to help cover his costs of producing it. But the purchase price will be refunded in full within thirty days if not fully satisfied or a full credit of the $4.95 will be applied against the purchase of a full size Magne-trol Board.

An illustrated brochure may be obtained on request or the "Trial Kit" may be ordered from Methods Research Corp., 556 Mosel Avenue, Staten Island 4, New York.

NO-LINE STRIPE ERADICATOR

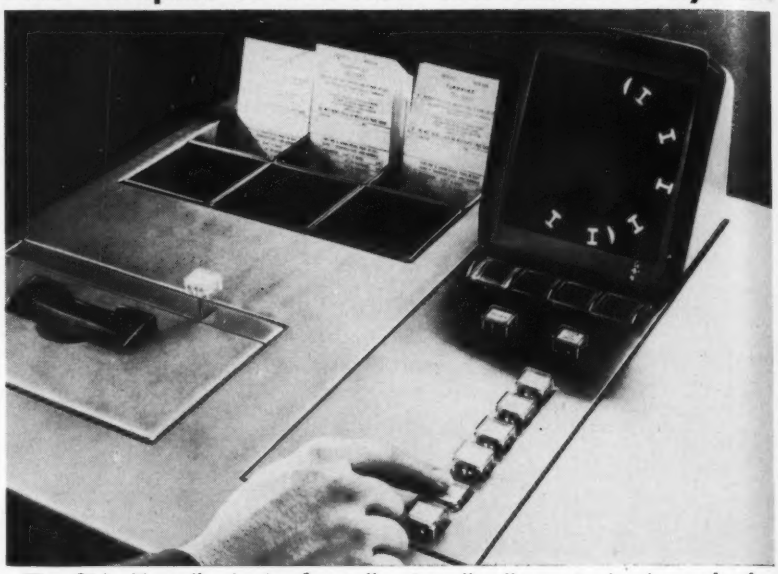
(Continued from page 134)

water. On extremely coarse pavements, care should be taken to insure thorough brushing into, and flushing out of the cavities. When the pavement has dried, the paint will have disappeared. There are no ill effects to the pavement or new painting.

No special preparation is required for the use of No-Line Stripe Eradicator. It is applied with a stiff brush as it comes from the can. One gallon erases 100-200 lineal feet of stripe, depending upon the coarseness of the pavement.

The product is distributed by the General Signal Division, Shield Chemical Corporation, 251 Grove Avenue, Verona, New Jersey.

Ohio Turnpike to Use New Toll Collection System



The Ohio Turnpike is the first toll road to use the new IBM electronic toll collection and audit system on all of its interchanges and terminals. The new equipment, recently developed by International Business Machines Corporation, went into operation at all toll booths of the 241-mile super-highway when the turnpike's remaining 219 miles was opened to traffic on October 1.

The equipment employs photoelectric "eyes," specially designed weighing platforms, and toll recorders. This combination of devices provides a unique system for dynamic weight classification, a simple, accurate, and automatic method of determining each vehicle's weight class. Without impeding traffic flow, all vehicles are weighed while in motion as they approach the toll booths. No specialization is required on the part of the driver. Electronic devices count the number of axles on each car or truck and weigh these vehicles as they enter the toll booth lane.

The toll equipment will provide Ohio Turnpike authorities with top operating efficiency, increased revenue protection and more equitable vehicle classification. The method of weighing a vehicle while it is moving and determining its classification by weight is widely accepted as the most desirable basis for charging tolls.

The operation of the new system is simple and automatic. As each vehicle approaches a toll booth at any one of the turnpike's 17 interchanges, a special weighing treadle built into the traffic lane pavement separately weighs each axle and a photoelectric detector counts the number of axles. At the same time, the toll collector, having inserted a fare card in the IBM toll recorder, determines by visual inspection the number of axles on the vehicle and depresses a corresponding key on the recorder.

Depression of the proper axle key automatically totals the individual axle weights and the recorder registers the vehicle's classification, along with other information, on the fare card. If the operator presses the wrong axle key, the toll recorder locks to prevent improper validation of the fare card and an indicator on top of the recorder lights up to display the correct axle pattern. The attendant, at a glance, may correct his error by depressing the proper axle key.

The fare card, indicating the amount to be paid for the trip, is given to the driver for presentation at the exit gate with his toll.

At the exit interchange, the equipment automatically senses the number of axles and the time punched by the entrance recorder and compares them with that of the exit recorder, enabling the toll collector to verify the information on the toll tickets.

The information recorded in the fare cards by both the entrance and exit recorders makes practicable the indication of excess time, detection of overweight, and individual control of transaction. IBM accounting machines will process the fare cards to do the turnpike's bookkeeping. At the same time the machines will also work on such statistics as compilation of traffic density flow to show which interchanges are busiest, making for the most efficient personnel assignments.

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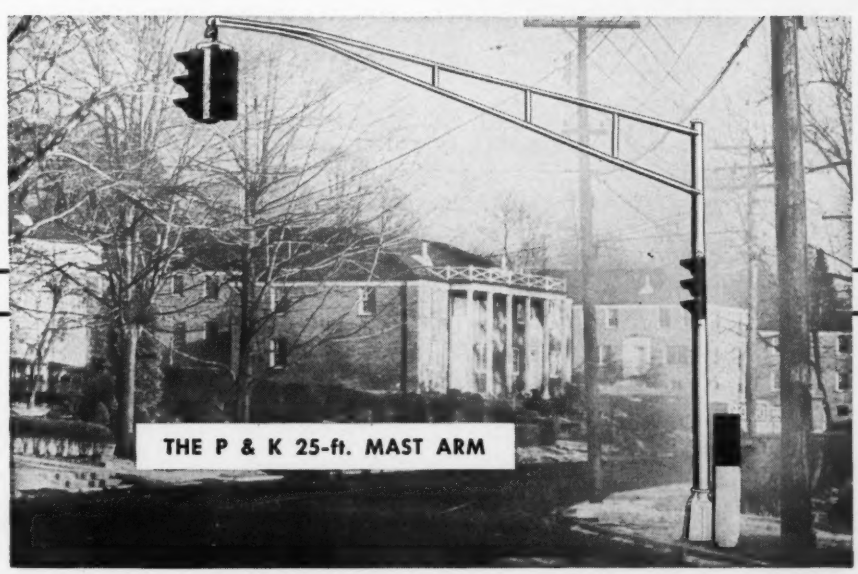
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BREAKING BOTTLENECKS AUTOMATICALLY

. . . over miles of traffic intersections

There's fresh hope for congested city traffic. The new Electro-Matic® Master brings coordinated automation to traffic flow in large city areas. The centrally located system does all the complex electronic thinking to move traffic along miles of thoroughfares, smoothly and more efficiently than ever before possible.

The electronic brain of the computer system evaluates thousands of traffic details received electronically from the detectors at dozens of intersections. With astonishing speed it **automatically** instructs each individual traffic light what to do and for how long. With every traffic change, the Electro-Matic Master changes its instructions. If traffic is predominantly heavy northbound, or southbound, or crosstown, or because of special situations, weather, time of day, or circus or football crowds, the computer knows this and adjusts for it.

Most important, by knowing the overall situation, unusual conditions at any intersection are not allowed to influence the smooth flow of traffic over the entire area. This ability to see the forest despite the trees does more to break bottlenecks and improve a large city's traffic conditions than can readily be imagined.

The Electro-Matic Master is adaptable to grid or arterial systems. To discover how it can **automatically** handle your city's traffic, write for Bulletin E-222.

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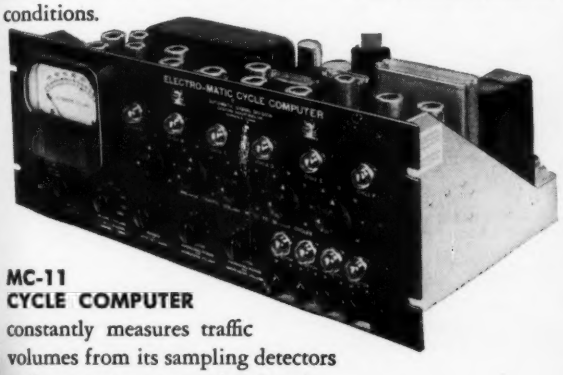
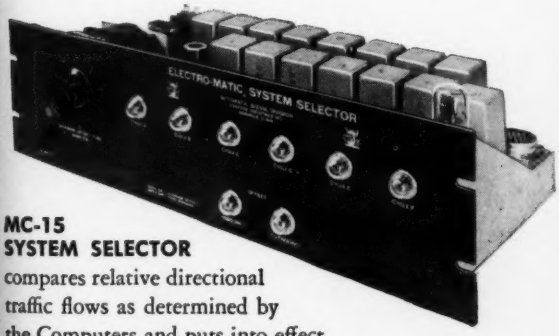
Traffic System Computer and Selector

Something new has been added in traffic control. It's ELECTRO-MATIC MASTER — the master control with an electronic brain. No more is it necessary to program a signal system on "guess work." Now you can schedule your traffic movements with automatic and continuous signal adjustment for changes in volume and direction *as they occur.*

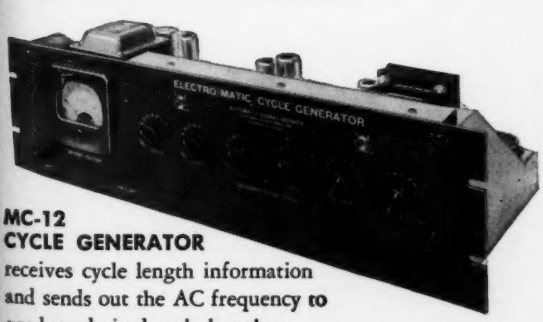
ELECTRO-MATIC MASTER locates sampling detectors at typical points in the area. Traffic information from these points is continually analyzed and processed by the MASTER. Cycle and offset patterns are swiftly and smoothly varied to accommodate changes in traffic volumes and direction. Result? Movement of maximum volumes under all conditions.



MC-11
CYCLE COMPUTER
constantly measures traffic volumes from its sampling detectors and computes proper signal cycle.



MC-15
SYSTEM SELECTOR
compares relative directional traffic flows as determined by the Computers and puts into effect the system best suited to conditions.



MC-12
CYCLE GENERATOR
receives cycle length information and sends out the AC frequency to produce desired cycle length.

ELECTRO-MATIC MASTER is modern analog computing technique applied to solving our toughest traffic problems. It's at work today from coast to coast. We will be glad to show you how it can help you. Bulletin E-222 is now available.

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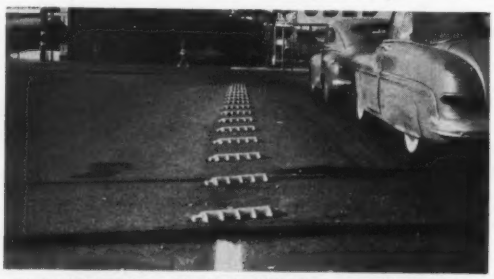

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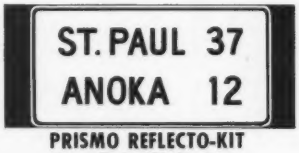

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